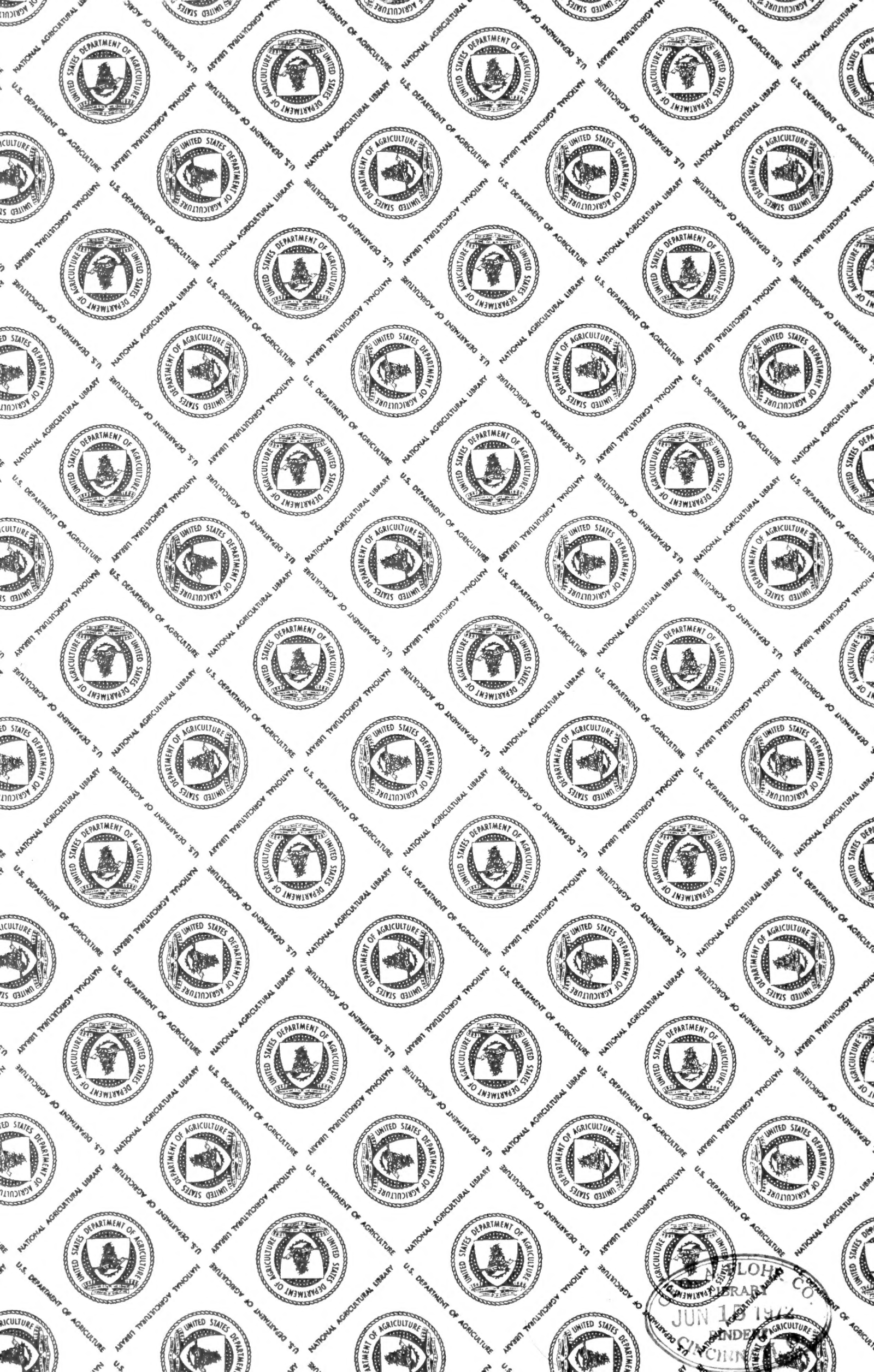
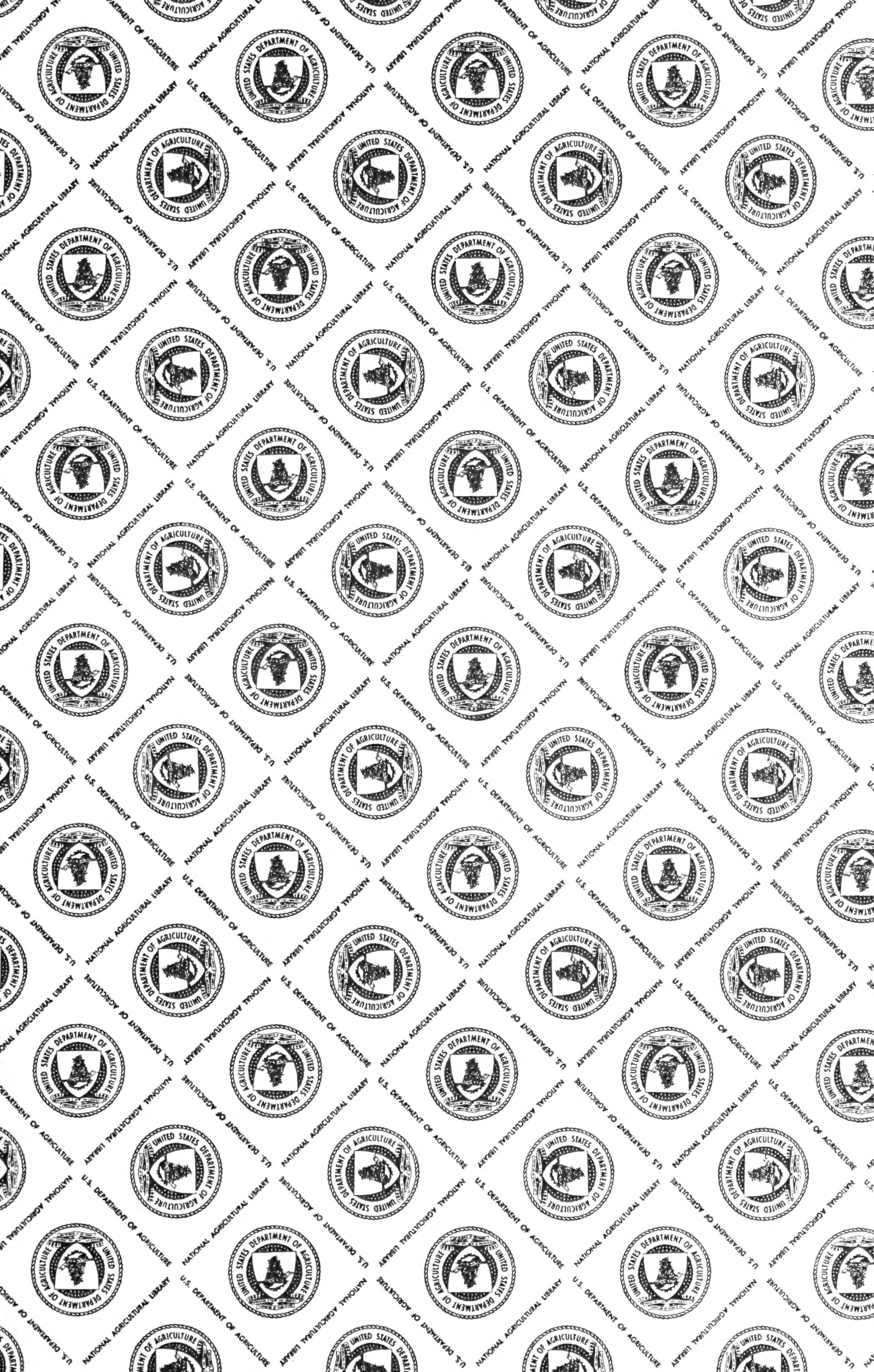


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THE COTTAGE GARDENER,
COUNTRY GENTLEMAN'S COMPANION,
AND
POULTRY CHRONICLE.

A JOURNAL OF HORTICULTURE, RURAL AND DOMESTIC ECONOMY, BOTANY,
AND NATURAL HISTORY.

CONDUCTED BY

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THE FRUIT AND KITCHEN GARDENS, by Mr. J. Robson, Gardener to The Ladies Cornwallis, Linton Park; and Mr. T. Weaver, Gardener to the Warden of Winchester College.

THE FLOWER GARDEN, by Mr. D. Beaton, late Gardener to Sir W. Middleton, Bart., Shrubland Park.

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VOLUME XXV.



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1861.

THE COTTON CARPENTER

COUNTRY GENERAL INFORMATION

Now we must have great care in the selection of the cotton. It is not only the quality of the cotton but also the quality of the work. The cotton must be of the best quality and the work must be done in the best manner. The cotton must be of the best quality and the work must be done in the best manner. The cotton must be of the best quality and the work must be done in the best manner.

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TO OUR READERS.

"So you are at it again!"

Now, we wonder how many of our readers will guess correctly—if any of them take the trouble to guess at all—who saluted us very recently with the above abrupt exclamation.

"Those," said Swift, "who benefit themselves by reading my Prefaces will remember." Now, that is what we also say on the present occasion. Those who have "benefited" by our Prefaces will remember, that exactly twelve months since—twelve months to a day—Miss PENELOPE POMEROY, upon arriving as she does annually at this season from Cackleton House, in Cornwall, warned us against changing from our old office to that in which we are now rooted. "Well," said Miss PENELOPE at that time, "I would never do *that*. I would make a shift, and remain doing as you are."

In the present April the same kind lady gave vent to her conservative feelings on finding that we had ventured to adopt another title by saying as she entered—"So you are at it again!"

"We shifted, Madam, to obtain more room and opportunity for our growth, and we have benefited by the repotting."

"All very well, but you need not have been rechristened. There can be no good in *that*, and I shall never call you anything but 'THE COTTAGE GARDENER.'"

"Madam, so that you continue to call us, you may call us what best pleases you. But, as you have a wise regard for the opinions of those who are competent to judge of such proceedings, allow us to read to you brief extracts from two letters—one preceding our change of title and increase of pages, and the other subsequently to those changes.

"Before the change a literary gentleman wrote thus—

"I am greatly pleased to see that you are following the right policy—namely, increasing the size of your Journal as it prospers, and thus giving the public a share in its success: this will induce still further good feeling among its subscribers. I have long felt how entirely it has outstripped its original cognomen; and it is not conducive to your own interest to call it 'THE COTTAGE GARDENER,' when, in truth, it circulates more largely than any other journal among professional gardeners and the gentry who delight in gardening."

"Subsequently to the change we have received this—

"You were always welcome before, you are still more welcome now; and I cannot conclude without expressing my individual thanks for your making what was very good still better. Allow me to add that the change of title is part and parcel of the improvement—it suggests what you are. *Sequoia* was not so suggestive a title as *Wellingtonia gigantea*, though applied to the same tree."

We purposed to conclude these few notes with the expression of our thanks, and of a few kindly parting words, to those who might justly take the opportunity of a New Series commencing to cease from a periodical which they had adhered to during a quarter century of volumes; but we know not of one to whom such parting words would be applicable. So far from there being a need for such parting words, we are able to tell our friends—and grateful indeed are we at such a truth—that the first and enlarged impression of the first Number of our New Series has been exhausted, and that a reprint has become necessary.

To those who continue to patronise us under our new title, and to those many new friends now adding to our strength, we will say no more than that no change of title—indeed, no possible change—will ever be accompanied by any change of purpose. Whether labouring in the service of the Gardener, the Poultry-keeper, the Apiarian, or the Householder, we have had and always shall have but one purpose—the discovery of truth. We may miss that discovery sometimes, but rarely for want of the aid given by many sound heads and strong hands, and certainly *never* because interest bids us swerve from the discovery.

TO OUR FRIENDS

My dear friends,

I am very glad to hear from you.

I hope you are all well.

I am writing to you now.

I hope you will like it.

I am very much interested in you.

I hope you will be happy.

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WEEKLY CALENDAR.

| Day of M'nth | Day of Week. | OCTOBER 2—8, 1860. | WEATHER NEAR LONDON IN 1859. | | | | Sun Rises. | Sun Sets. | Moon Rises and Sets | Moon's Age. | Clock afterSun | Day of Year. |
|--------------|--------------|-----------------------------|------------------------------|----------|-------|-----------------|------------|-----------|---------------------|-------------|----------------|--------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | |
| 2 | Tu | <i>Solidago virga-aurea</i> | 30.136—30.106 | 73—55 | S.W. | — | 5 af 6 | 34 af 5 | 53 5 | 17 | 10 47 | 276 |
| 3 | W | <i>Solidago lapponica</i> | 30.124—29.918 | 75—45 | S. | — | 6 6 | 32 5 | 18 6 | 18 | 11 5 | 277 |
| 4 | Th | <i>Inula dysenterica.</i> | 29.866—29.803 | 80—47 | S. | — | 8 6 | 29 5 | 51 6 | 19 | 11 23 | 278 |
| 5 | F | <i>Inula cylindrica</i> | 29.959—29.947 | 74—53 | S.W. | — | 9 6 | 27 5 | 35 7 | 20 | 11 41 | 279 |
| 6 | S | <i>Inula crithmoides.</i> | 29.979—29.842 | 74—57 | E. | — | 11 6 | 25 5 | 32 8 | 21 | 11 59 | 280 |
| 7 | SUN | 18 SUNDAY AFTER TRINITY. | 29.806—29.759 | 73—55 | S.E. | ·18 | 13 6 | 23 5 | 43 9 | 22 | 12 16 | 281 |
| 8 | M | <i>Anthemis nobilis.</i> | 29.870—29.844 | 74—46 | S.E. | ·10 | 15 6 | 21 5 | 1 11 | 23 | 12 32 | 282 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 62.4° and 43° respectively. The greatest heat, 80°, occurred on the 5th, in 1834; and the lowest cold, 26°, on the 8th, in 1858. During the period 104 days were fine, and on 119 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

Cauliflowers, continue to prick out the young plants under hand-glasses and in frames; a few may be potted in small pots, and placed in a frame where they can have an abundance of air and light, and be protected from excessive wet. *Celery*, a few rows, if required for immediate use, to be earthed up to the full extent of the leaves. The successional crops to be earthed up gradually until they are required for use, or on the approach of winter. The plants should at all times be thoroughly dry before earthing, or they will soon rot. *Mushrooms*, keep the out-door beds protected from heavy rains by a good covering of litter. *Potatoes*, continue to take up the crops as they reach maturity. Sort them before they are housed, and frequently afterwards. *Radishes*, thin slightly the late sowings of the Spanish sort. If a succession of the common sorts is required, the sowing to be made in a frame. *Spinach*, thin the winter crop, leaving the plants about nine inches from each other; keep them free from weeds. Fresh plantations of *Cabbages*, *Lettuces*, &c., to be frequently examined; if a plant droops without an apparent cause, it is very probable a grub will be found at the root, which, if not destroyed, will extend its ravages to others. *Broccoli*, earth up the plantations, as they will now be growing rapidly.

FLOWER GARDEN.

Some of the more tender and choice plants in the beds and borders, if wanted for store plants, to be now taken up, potted, and placed in a close house or pit until they have made fresh roots, when they may be removed to their winter quarters. If cuttings are now taken from *Chrysanthemums*, and put three in a 48-sized pot, and placed in a gentle heat, where they will soon root, and bloom well for decorating the fronts of stages or for groups. The *Auriculas* may now be placed in their winter quarters. Raise the frame on bricks at each corner, that the plants may have a free circulation of air around them. Get a few beds in readiness for the reception of *Hyacinths*, *Tulips*, and *Crocus* bulbs, &c.; they produce a pleasing and interesting effect in the spring. *Crown Imperials*, hardy *Lilies*, *Narcissi*, *Irises*, and other such bulbs to be planted in the borders. Transplant shrubs; lay *Box-edgings*; mow lawns, and clip the edgings of walks, to leave the whole neat and in good order for winter. Also, roll gravel-walks frequently in damp weather, so as to render them smooth and comfortable to walk on.

FRUIT GARDEN.

Where it is intended to fill up vacancies in walls, or to plant fruit trees in any other situation, the ground should be prepared at the earliest convenience, and any fresh soil to be used for planting to be thoroughly exposed to the action of the weather, so as to have it in a mellow state when wanted for use. In some cases *Strawberries* produce a superabundance of foliage, and but little fruit, either fresh plantations should be made, or the old should be thinned into patches not less than two feet apart.

STOVE.

Although forcing must be avoided as much as possible, nevertheless the cold, damp nights we are now having must not be permitted to affect the temperature so as to check materially the declining growth. At every opportunity look over the plants to keep them free from insects; remove dead leaves, and put stakes to all that require them. Encourage the different kinds of *Begonias* for winter flowering, giving them larger pots if required. Promote, also, the growth of *Achimenes picta*, *Gesnera zebrina*, the *Euphorbias*, &c.—plants that add much to the beauty of the stove in winter.

GREENHOUSE AND CONSERVATORY.

See that all luxuriant growth among *Heaths*, *New Holland* plants, and other such hardwooded plants is duly stopped, to produce symmetry and a regular balance of growth. Be on the look out that neither mildew, green fly, nor other such pests are allowed to injure them. Give liberal ventilation both night and day when the weather is favourable. Water to be cautiously given at this season, especially to large specimens; for there is much more danger in over-watering now than when the weather was warmer, and the plants in more active growth: therefore, look over the plants frequently, and never water until it is absolutely necessary. Any of the *Chinese* or *Indian Azaleas* that have not yet perfected their flower-buds to be kept in a warm and light situation for some time longer. The *Camellias*, both those which flowered late in the spring and the others which are required to bloom early, to be kept in a warm situation.

PITS AND FRAMES.

Take particular care during the present damp weather not to water cuttings too freely. Give air every morning. Continue potting off the most forward-struck cuttings. Get in a supply of all kinds of shrubs, more especially *American*, for forcing. All kinds of *Dutch bulbs* to be immediately potted, and plunged in a convenient situation ready to be removed to the forcing-pit when wanted. Presuming that all the stock of tender plants is safely housed, and that anxiety about their safety is in a great measure diminished, proceed with the arranging and removing into any spare cold pits the stock of *Pentstemons*, *Antirrhinums*, *Linums*, *Phloxes*, *Brompton*, *Intermediate*, and other *Stocks*, and all herbaceous annual plants in pots that require a little protection. *Mignonette* to be placed in its permanent situation for wintering. The *Lily of the Valley* intended for forcing to be potted and plunged overhead.

W. KEANE.

RECAPITULATION.

ALTHOUGH the effects of this season on the flower garden have not been similar since 1816, the amount of new strength to the present system of bedding is considerably above the average; and in keeping pace with the auxiliaries in our record of the progress of such things, some of the things themselves, for want of space

or lack of knowledge of them, were registered in such a way as needs some more favourable points to be explained, and this means a recapitulation of subjects already referred to.

The old *Gnaphalium margaritaceum*, at Hampton Court, as it was called in all the Courts in former times, has been altered by the late Dr. Brown to *Antennaria*; and the specimen of it in the botanical arrangement at Kew is tallied *Antennaria margaritacea*, good and true in botany, but twice too long among beds: therefore, if you have no objection, I should like to mention it in future as the white Everlasting, for it is a true Everlasting, and the whitest of all the bedding plants. It is fit only for where good trainers are allowed, as at Hampton Court, Kew, and the Crystal Palace.

Well, about the *Variegated Mint* at Kew: not one of the *Geraniums* can come up to it when managed as they do it there; but there has been a profound secret in their way of doing it, and I had really to assume the *Garibaldi* before I could get to fathom the mystery. It is of no use telling a bull-and-mouth story about such things to an old gardener like me. We may not always be able to get up the whole truth, but we take in nought but the bare truth—and here it is as plain, from Kew itself, as they could make it. "They never plant an old root of it, or make any of it from cuttings," as I said already, and that was all I could get out of them until I pointed out plainly the way we should go. Any time in October or November, after the housing in completed, they take up every morsel of the *Mint*, put it into barrows, carry it to the blocking system there, and then a careful man takes it in handfuls, one left-handful at a time, regulates the roots so that they be all at one length from his little finger, or just two inches out from his handful; then he puts them, the roots, or root ends of the handful, upon the block, and with one stroke cuts them all clean off, just leaving two inches of the bottom of all the old shoots full of fibry little young roots. Then he turns the handful, and grasping the two-inch rooted bottoms within his fist, he cuts off all the young, and all but three inches of the old wood, throwing that handful aside to an assistant, and goes on so to the end of the job. Any gardener with half an eye can now see into this mystery, which is founded on the soundest philosophy. The strength of Nature is cut off, in these roots, just before the winter's rest comes on, and three inches only of the hardest parts of the old shoots are retained, and get no winter rest at all, but are set to work immediately. Thus, the assistant divides them into single slips or parts, and they are planted out on a border in fresh soil, just as they put things in by the heels in nurseries; this sets them a-growing immediately—say at the roots, and the eyes on the bits of hard stems get full of sap, by-and-by, and in the spring they "break" so slowly as to make it a "regular break." In this condition the "breaks" are planted out any time in the spring when the ground is ready. March or April, or any week in each will do, and from the day the shoots are planted, the young wood is not allowed to rise above the height of the edging, or whatever the purpose may be. There are no underground suckers to make coarse growth, or green, or pure white shoots, as one sees where the thing was not understood, and that was in nine hundred and ninety places out of every thousand.

And, after all, who knows but the white Everlasting will submit to the self-same treatment, and be as easy to do as they do the *Variegated Mint* at Kew? and who knows, also, if Mrs. Barley, my next-door neighbour, will give me her big plant of the white Everlasting, but your humble servant may be the first to prove the thing one way or the other?

The very same side of philosophy is at the bottom of the shoots of all their plants at Kew of *Calceolaria amplexicaulis*; and they flower it just six weeks earlier than the average of most places that I know of, and I

never had the shine so much taken out of me as it was done there, after I spoke of the supposed two kinds of *amplexicaulis*—the one early and the other late.

There is only one kind of *amplexicaulis*, and one way of doing it, so as to be up to the mark by Midsummer day. The secret is in two branches here. The first branch of the subject is not to allow the young plants to stand still, as we say—that is, not to let them rest entirely from growth for a single day after they are rooted; and that involves another consideration:—if you have sufficient winter room to allow you and *amplexicaulis* to be on the move the whole time, good and well. The earlier in October you strike your *amplexicaulis*, the stronger your plants will be next May, and the more they bloom; but if you are pinched for room in winter, as most people are, the wisest thing is not to root the cuttings to the latest period at which they will strike, and that runs on to Christmas some seasons. By being so late with them there is less risk in their taking to rest, for that is their bane, and the reason why it is so is at the bottom of the shoots. It is the nature of this kind of *Calceolaria* to begin growing at the collar after every rest, no matter when the rest happens; then the art is to keep it from resting, and so cause it to grow on from the tops only, because the original tops will bloom so much sooner than the tops of the bottom shoots of a second start or growth.

The second branch of the subject is easily shown, and more easy of understanding to such as have seen the folly of training down Moss and other Roses after the manner of *Verbenas*, but previous to their introduction. Laying down Roses is the same to them in principle and effect as the resting period; the next growth springs from the bottom of the laid shoots, and the strength is thus taken away from the flowering branches, and the succulent and forced growth from below will not bloom nearly as fine next year. The same principle and the same effect are at work when you train down the shoots of *Calceolaria amplexicaulis*; the tops of them after being trained down grow just as slowly as the tops of a trained-down Moss Rose, and the growth from the bottom of the shoots begins the moment you train, and, of course, will be a longer time in coming to blooming length. For these reasons, which are founded on natural laws, the people of Kew never train their *amplexicaulis* till it is first in full bloom, and seldom then. The consequence is, they bloom it six weeks earlier than those who train it down, and some weeks before those make quick plants of it from cuttings and then rest them till the natural impulse comes on in spring. And they tell you—at least they told me and more of it—to take one-half of a batch of cuttings and do the one-half this way, the other half that way, and the result will be as here set forth. Now, when you come to see the difference of the natural habits of this *amplexicaulis* from that of all other bedding sorts, you will see the force of the argument against training it down, and against resting it entirely at any period before planting-out time. Thus the application of practical knowledge in aid of natural laws, is the same foundation of successful gardening; and thus, also, three kinds of plants belonging to one genus may require three different modes of treatment to make the best of things—a thing that all the philosophy under heaven could never ascertain by reasoning from analogy. A young gardener should never rest satisfied with his success in any one thing until he can see the natural reason for it, and the natural reason for anything he does is the highest point to which science can reach in respect to it.

The next thing is the boy who would not say his letter A for fear they should compel him to say B also, and all the rest of them. Now, if you believe me, the same natural law which prompted that boy exerts a wonderful influence over some old men. For instance: here is your humble servant, who never knows anything about any Ferns, and yet grows to this day Lady Ferns, Maiden-

hair Ferns, and fulgidums, and yet pretends to know nothing about them; but, like the boy, may it not be for fear they would make him do them for THE COTTAGE GARDENER? I say nought, of course; but I must say that I have seen several most beautiful new Ferns this season, mostly from Mr. Sim, of Foot's Cray Nursery, Kent. But having seen them in my capacity of volunteer in the cause of the Horticultural Society, and as the Society cannot yet afford to lop or moulit a feather or Fern, I do not say anything about them in these pages; but lately we had up from Lancashire such a darling of a new Fern, that I cannot resist the temptation of recommending it, or frills of it, as an additional illustration of dressing out a young lady's head for a county or city ball; for it seems as if it were made on purpose for that very thing—say, for soft, feathery, silver spangles. I never saw anything like it, and it is a sport, and that from the silver powdery *Gymnogramma peruviana* of recent run. It is silvery all over the leaves, or fronds, like the feathers of some foreign bird, with the ends of all the feathery parts frilled and drooping, and having a scintillation, or wavering motion in the air, that would add charms to the most Grecian or Roman head in the classics. It was sent up to London by Mr. P. Kelly, gardener to Mrs. Redway, Redmont, Bolton-le-moors, Lancashire, and is named *Wetenhalliana*, after a gentleman down there, by name Wetenhall.

The next turn of the die brings us on to *Gladiolus* and crown ornaments. This fancy is now confined to the breed of *Natalensis*, of which *Gandavensis* was the first break; and it is called the *Gandavensis* breed even by some who should know their p's and q's much better. The orange in *Natalensis* or *Psittacinus*, mixed with the fiery scarlets of the elder breeds, has made a splendid soft vermilion tinge; and the pure white of *multiflorus* has turned the same rich orange to a light primrose, to a canary, and to a light lemon tinge; and the lilac, or purple, or bright red feathers in the front petals of the old strain are now up to high scarlet and crimson; but at this point I am certain a cross with *Cardinalis* would much brighten up the higher strain of the present race by such light feathering in front as would improve the high colours on the model of Tom Thumb-beds edged with the best bedding *Geraniums*, and there is no other flower in creation which would give the white so pure, and so much in front as the pollen of *Cardinalis*, the oldest of the race, and one that was regularly bedded out at Dropmore in 1825. From one kind called *Osiris*, which was in two collections at the Crystal Palace, one would be apt to think that European sorts have got crosses at last, or at least one cross in the family; *Byzantinus* being the only *Gladiolus* on which it would be safe to father *Osiris*. The three best yellow *Gladioluses* at the Crystal Palace Show were *El Dorado*, best; *Sulphureus*, second best; and *Canary* equal with it. *Ophir* is a darker yellow, and these are the best of their tints yet out. The best white was *Madame Binder*; best blush, *Impériale*; and best deeper blush, *Hebe*, *Vellida*, *Egerie*; best orange-scarlet, *Brenchleyensis* and *Louis Van Houtte*; and *Vulcan*, the deepest crimson; *Osiris*, a purple, after the European kinds; *Comte de Morny*, a very striking light crimson or dark cherry, much blotched with white in front. All these were in the collection of the Messrs. Paul, of Cheshunt; and most of them were in that of Mr. Standish. Mr. Youell had the greatest portion of his of *Brenchleyensis*. Those from Paris were chiefly from lighter and a different cross. From these and what I had seen last year at the Wellington Road Nursery, and the assistance of a kind, charitable grower of the race for many years, I have been enabled to make the following very limited and most select assortment for you to order now, when you send for the forcing bulbs, and for the Tulips, according to the selections I made last spring; but I would not order them to be sent now—not till the end of February or

some time in March; for this reason, that they are not yet taken up for drying, that if any of them get the dry or wet rot in harvesting you will not be the loser; and the reason for ordering them at all till the spring is this, that first comer is always best served in the nurseries. This, in particular, is on this wise:—the orders for *Gladioluses* are entered in the order-book in rotation as they come, and in the spring they begin at the beginning of the order-book, and pack and send off in the same rotation, and the worst luck goes to the slowcoaches.

Again: If you mean to put a dozen or two, or twenty kinds into pots at the beginning of March, or early in April, or at both periods, and that you wish them to be along with the bedding plants till bedding-out time, you will have them so much earlier in, and you must make sure of ordering early on that same account; and if you only mean to plant them in the open ground by the 20th of April, or not till all the spring bulbs and flowers are removed in May, you will be equally safe if the roots are in your own possession; but if you delay the order till the time comes round, a hungry lot of husky bulbs will not form the worst part of the play; but the "sarve-him-right" jibs and jeers of the packers, and of his own man at home, who will get all the blame and botheration which, in right, belongs to the governor himself for not doing as his mother did before him. Depend upon it, ladies are always first at this mart; but many gentlemen not till the last moment, and that is how they get served.

I should like to be able to give the origin of every one of these *Gladioluses* below; but that is not so blunt as a story about *Gladioluses* I once heard Mr. Standish relate about a baby that is down in his part of Bagshot. This baby is a great favourite with half a dozen families there, but not being quite sure of the origin of things in that line, they all call the dear little prattler "our baby;" and he, Mr. Standish, being at fault about the origin of a Tom Thumb seedling *Gladiolus*, he called it "Our baby," and I booked "our baby" *Gladiolus* at the Crystal Palace thus—a dwarf with three dark marks on a lateritia ground colour, which, with judicious crossing might become the mother of a new race of low, close-growing plants for the flower-beds.

The very best *Gladioluses* for massing in beds—

El Dorado, aforesaid.

Leseble, pure white ground, marked in front with violet-rose.

Ophir, deep yellow, marked with purple in front.

Junon, white ground, and marked with lilac and purple.

Rembrandt, very deep scarlet throughout.

All these are extra fine, and in two years John Standish, Mrs. Standish, Garibaldi, and Samuel Waymouth will be added to them. The following are first-rate kinds of sterling merit:—

Achille, a beautiful red, marked with white in front.

Adonis, rosy salmon, more yellow in front and carmine marks.

Comte de Morny, aforesaid.

Duc de Malakoff, a light sulphur ground, flamed with orange-red; a fine thing indeed.

Le Poussin, clear red, and marked finely with white.

Madame de Bonneville, cherry-rose, marked with purple on a light yellowish ground, the bottom nearly white.

Madame de Vatry, white, tinged with yellow and carmine spots.

Napoléon III., orange-scarlet, marked with white.

Ninon de l'Enclos, blush or flesh colour, marked with rose.

Olympe Lecuyer, fine blush, with crimson marking.

Othello, orange-red; a dwarf for a front row.

Raphael, vermilion ground, white and violet centre.

Victor Verdier, of the deepest red all over.

And the following are half-a-dozen of the next or second-best kinds for massing, and with *Brenchleyensis* for cut spikes to dress the drawing-room glasses form the

virgin cream and honey of the breed of *Natalensis*, *alias* badly as *Gandavensis*, the richest of these races.

Bernice, rosy-salmon, marked with orange-red.

Canary, a clean clear yellow, marked with rose.

Hebe, salmon, striped with carmine.

Madame Binder, aforesaid.

Pegasus, carnation, mottled with red.

Princess Clotilde, a delicate rosy salmon, with large violet spots on a white ground in front.

If I live to be old enough I shall possess all these and *Cardinalis*, and cross every one of them that is above a rose or rosy salmon with the pollen of *Cardinalis*, to see if I can take the shine out of Garibaldi and Samuel Waymouth; the latter a schoolmaster of eminence, and most probably one who claims his share in "Our baby."

D. BEATON.

MEANS TO PRESERVE CUT FLOWERS.

MOST people like to preserve bouquets of natural flowers. Many methods have been recommended, but they fall short of the object to be attained. In short, the water becomes putrid, and is obliged to be renewed at least once a-day, without checking the alteration of the flowers, which commences soon after their separation from the plant. The following method, which has completely succeeded, consists in introducing a spoonful, more or less, of powdered charcoal in the water contained in the vessel, and immersing the lower extremity of the stems of the flowers in the charcoal. By this proceeding the most beautiful results are obtained, as the flowers are preserved without sensible alteration, at least as long time as in their natural condition, without it being necessary to renew either the water or the charcoal, or by giving them any other attention. The water is preserved quite clear in the vessel.

THE SEASON AND ITS EFFECTS ON VEGETATION IN SOUTH DURHAM.

THE last winter and spring were the wettest on record. Snow lay on the ground, more or less, twenty-two weeks. Warm weather never appeared before the 4th of May, when the thermometer rose to 76°, and continued fine till the 11th, after which cold wet weather returned, and the thermometer never reached 76° again till September the 12th.

FRUITS.—Apples, crop heavy; fruit in most instances very small. Pears very abundant, and very small; few, if any, of the late kinds will ripen. Plums very abundant, do not ripen, and no flavour. Cherries, crop large, quality bad. Gooseberries abundant and bad. Currants (Red, White, and Black), crop large, very sour. Raspberries very fine and abundant; the Northumberland Fillbasket decidedly the best. Strawberries, crop good, fruit large; some early kinds good. Nevin's Princess Frederick William is a great acquisition, by far the earliest, good flavour, high aroma, great bearer, medium-sized fruit, and excellent for forcing. No garden should be without it; it will banish the Black Prince.

VEGETABLES.—Peas, crop very good in the early part of the season; much taller than usual, late crops have not filled; still flowering abundantly. Potatoes not an average crop, quality bad. The disease is as bad, if not worse, than in any previous year. Beans well corned, very tall. Onions, plenty of bulbs, but small. French Beans, as bad as possible. Scarlet Runners, plants weak, crop thin. Carrots, middling crop. Cabbages and Cauliflowers, the numerous wood-pigeons destroyed what the frost left in early spring; the spring-sown pretty good. Celery late and grows slow.

FLOWER GARDEN.—Calceolarias have done well though late, particularly Prince of Orange and Rugosa. Verbenas, very irregular. Purple King and Il Trovatore have done very well, as well as Moonlight and Etoile de Vaise. All others failures. Lobelias, on the whole, good; particularly those raised from cuttings. Geraniums, variegated—Flower of the Day, Golden Chain, Countess of Warwick, and Mountain of Light, have done well; Mangles' Silver Stripe very robust; Brilliant less variegated than usual. Scarlet Geraniums—Crystal Palace and Attraction the best; Tom Thumb, robust, full of leaf, and no flowers; Cerise Unique, few of the flowers opened well, being deformed; Model Nosegay, very fine; Imperial Crimson, very

strong, but few flowers; and the Old Queen as good as any of them; Baron Hugel, much diseased.

MISCELLANEOUS PLANTS.—Petunias bad. *Perilla Nankinensis* better than I ever saw it. *Alyssum variegatum*, very good. *Cerastium tomentosum*, good. *Gazania splendens*, one of the best beds in the garden. Dahlias bad. Hollyhocks like hop-poles, few flowers opening. Phloxes vigorous, but poor flowers. Roses very good. *Salvia patens* very full of bloom. *Sanvitalia procumbens*, as bad as possible, and *Saponaria calabrica* little better.

The ground temperature has been much below the average. At one foot deep the thermometer has stood at 54° for the last five weeks. On the whole there has been less wind than usual, but in May, as soon as the leaves of the Beech were fully developed, we had a gale for a few hours, which injured the leaves very much, particularly on the west side, which has given them an autumnal hue all the summer.

Variegated Begonias have barely held their ground, and *Caladium marmorata* and *C. argyrites* disappeared some months back. *Myosotidium nobile* planted out in a south border doubled its size, and is far larger than those kept in pots. *Aquilegia glandulosa* has been particularly strong and fine.—THOMAS SHORTT, Raby Castle.

STOVE ORCHIDS.

GOOD collections of Orchids requiring stove treatment are now very numerous in this country, and such is their beauty that the number of cultivators is annually increasing. The skill necessary to grow them displayed by English gardeners, shows to no small extent what perseverance can accomplish in overcoming difficulties that at first seemed almost insuperable. Fifty years ago exotic Orchids in this country were almost unknown to gardeners, and it was only by studying their native habitats and peculiar circumstances as to their mode of growing in exotic climes, that has led to their successful culture. If any plant is brought from foreign climes, where it grows in a dense, moist forest, and is potted in any chance soil that may be handy, and placed on a shelf in a dry stove exposed to the burning summer's sun, it must soon languish and die. Such, no doubt, was the fate of many of the orchideous plants collected and sent home without, perhaps, a line to say under what peculiarities of climate or soil it enjoyed in its native wild. However, some few flowered, and their extreme elegance, curious forms, and singular appearance, led to inquiries, which, when given faithfully by collectors, soon led to a different mode of culture, and, finally, to that perfection we now see displayed in our stoves and exhibitions. This success has been the cause of a greater demand for them; so much so, that hundreds of species have been introduced, and the numbers are increasing annually.

As a natural consequence, information on their management is in request, and one or two manuals have been published on the subject. The first was published by T. C. Lyons, Esq., a zealous amateur and grower, at Ladiston, in Ireland. He first wrote a small book on the subject, printed it, and bound the first edition with his own hands, and generously gave the first edition away to his friends, and all the cultivators of Orchids that he knew of. That small work was so well thought of, that he was induced to write a considerably enlarged edition, much improved both in form and matter. This was published in 1845, in London, by Mr. J. Ridgway, and by Messrs. Hodge and Smith, of Dublin, and is now, I believe, out of print. Another somewhat larger work on the culture of these lovely plants is from the pen of Mr. B. Williams, formerly gardener to J. Warner, Esq., of Broxbourne, Herts. I may venture to mention also, that I wrote a few essays on their culture in the earlier volumes of THE COTTAGE GARDENER. Notwithstanding all these publications, it seems that a few concise instructions in a simpler form and in less compass are needed, and will be useful to young gardeners, amateurs, and others, that may be desirous of growing Orchids, and wish to know the best way to set about their culture.

On each point of culture I shall endeavour to give plain instructions in such language that the veriest tyro can understand; and if he will, or can, put them in practice as far as his means extend, I have no doubt by careful attention he will succeed in growing his plants in a satisfactory manner.

THE ORCHID-HOUSE.—Let not the amateur be alarmed about the expense of a house suitable for Orchids. If his collection at first is small, any kind or form of house, if sufficiently heated, will, with judicious care, grow them on till a larger house is needed; but where expense is no object, then a proper house

should be put up for them. Experience has proved that a span-roofed house is the best form. Now, as these plants mostly grow on trees in their native country, there they enjoy a large amount of light. Hence we should study to give them as much light as we possibly can in our, comparatively speaking, dark climate. The span-roof does so, as everybody knows, much more than a mere lean-to; and in order that every part of the house may have an equal share of light at all hours of the day, the position of the house should be placed to run from east to west. The morning sun will then send its beams on the east side at noon, when its strong power might be injurious, the rays will be slanting on the plants; and the afternoon sun will enlighten the western side to the latest hour.

This house should have a division—one part to be devoted to East Indian species, and the other to such as are from the more temperate climes of the western hemisphere. Generally speaking, this latter house should be 10° or 15° cooler than the first. When the Indian species are in bloom, the flowering season may be prolonged by bringing them into the cooler house.

HEATING.—When orchideous plants are making their annual growth they require the greatest amount of heat. To economise fuel, then, the season of growth should be during the last month in spring and the summer. The best mode of heating and most easy to manage, is by hot-water pipes, with a tank on the top of the ascending pipe. This mode of heating suits Orchids the best of any, it can be so easily regulated. Apply it then in sufficient power to give the most heat when the plants are growing. Some may object that the season of growth does not come uniformly to all species of Orchids. True; but that propensity to grow in autumn or winter may, by judicious and persevering care, be altered and changed just as easy as forcing Roses at Christmas, or Grapes in May; and, as is well known, when once the habits of a plant are once changed, that change becomes every season more fixed on the plant, till at last its season of growth is completely altered, and remains so as long as the cultivator pleases. These facts are well known to the forcing-gardener, and hence the plant-grower may by the same means set all his plants their season of growth, and compel them, as it were, to continue to keep that season year by year; only let him have power over his means of heating, which he may have by a boiler and hot-water pipes, and plenty of them. I observed above, that the pipes should have a tank upon them; that tank should be, during the growing season, kept full of water. The pipe when warm heats the water, and causes a gentle moisture to rise amongst the plants, which is highly beneficial to them, especially to those growing on blocks or such as root from the stems in the air. The degree of heat Orchids require is by some growers set too high, and by others too low. I have found, from the experience of a quarter of a century, that the following table, drawn up for my use, and corrected to the state it appears below, is amply sufficient for them:—

| EAST INDIAN HOUSE. | | | SOUTH AMERICAN HOUSE. | | |
|--------------------|------------|--------|-----------------------|------------|--------|
| | Day. | Night. | | Day. | Night. |
| Summer | 75° to 90° | 70° | Summer | 60° to 65° | 60° |
| Winter | 65° | 60° | Winter | 55° | 50° |

These are average heats, inasmuch as on very hot days the heat will be a few degrees higher, and in very cold weather it may be a few degrees lower without any injury to the plants.

T. APPLEBY.

(To be continued.)

HINTS ON PLANTING VEGETABLES IN A WET AUTUMN.

A WET autumn after a cold, rainy, and sunless summer, is at all times unfavourable to the kitchen gardener as well as to all other classes. The ground having never been warmed as in former years, is now soddened with wet, and presents that ungenial character so much at variance with the wellbeing of vegetation; and only the coarsest weeds and plants, whose native country is one colder than this, can be expected to thrive in anything like an ordinary way.

I am not aware of any of our vegetables originating in a country where the summers are not absolutely warmer than those of England: hence we may readily understand the slow progress many of our most useful vegetables have this year made. It is needless to say, our winters are milder than they are generally on the Continent; but the frequent changes we undergo are

very trying to herbaceous vegetation, as was too plainly visible last winter.

Amongst the classes which suffer least from a cool, moist summer Peas stand pre-eminent—in fact, in warm, dry places they suffer more, and do really less service in what we call a fine season than they do in a cold, wet, and ungenial one. Beans, however, like more sun and dry weather; and most of the Cabbage tribe like warmth as well as moisture. Lettuces, perhaps, endure cold if accompanied, as it was this season, with rain; but they like warmth and moisture better. We fear there has been great difficulty in getting a supply of plants in a season like this when every place is swarming with slugs, and the greatest care and watchfulness were required to save the young plants; but as many of these crops will now require planting, a few words on the plan most likely to secure success may not be out of place.

It is well known that the preceding crop has much to do with the state of the ground for present planting. Turnips, Cabbages, Cauliflowers, and similar crops leave broods of slugs behind them which are fatal to Lettuce and other small and succulent herbage: consequently it is not prudent to follow this course without the ground having previously lain some time in a state of fallow, or been well dressed with lime, or something equally obnoxious, to the enemies we have to contend with. But it is right here to say that ground that has been dug and prepared a month or six weeks beforehand is in a better state to sow seeds or plant delicate plants on than what is fresh dug and prepared. Seeds especially germinate quicker and better on such ground than they do on the freshly-stirred ground. However much the latter may improve those plants that are established, and in growing state, the well-sweetened condition of the surface renders it more suitable to the wants of delicate seedlings; and although, by lying the time alluded to, it may appear hardened on the surface, it is only becoming more like the general condition of the ground where all seeds are sown in a natural way. It is in like manner in a better condition to receive the small plants entered by a dibber; for the surface and the few inches wanted to plant upon being mellow and sweet are more congenial to the young rootlets than when raw and fresh turned up. It is, therefore, advisable to plant on such ground in seasons like the present, when wet, cold, and a host of enemies beset the young crop and make its welfare a matter of much uncertainty; for, besides the soil being in a better condition, it is likely the slugs and other insects that were in it at the time it was dug may have been driven out for want of food, or destroyed by the dressing given at the time; besides which, a smooth, rather hardened surface presents little harbour for these pests. So that in all cases where the state of the ground will admit it without too much kneading, it would be better to smooth the ground such plants are planted on, in order to destroy the shelter these destructive enemies to vegetation avail themselves of; for they cannot endure the frost of winter or sun of summer without some protection, and some suitable opportunity must be taken to stir the ground again when the plants are so far advanced as to be out of danger of the marauders.

In sowing or planting in the autumn months, care must be taken to do so on dry days and when the ground is as dry as there is a chance to get it. Much, of course, depends on the character of the soil; but all soils are worse from being trodden on in rainy weather, although the most loose ones are quickly ready whenever it becomes fair. In the present season, when we have suffered so much from rain and cold, many crops have remained nearly stationary for weeks; while others present the uneven gapped appearance, proving the injuries they received. It is to guard against these that it is here advised to plant or sow the crop on stale rather than fresh-tilled ground. And if there still be some loss, rest assured that it would have been many times worse had it been on ground of a contrary description.—J. ROBSON.

LARGE PEACH.—A gentleman in this neighbourhood (Mr. Boulton, of the Laurels) gathered on August 3rd a Noblesse Peach, which measured 11 3-16ths inches in circumference, the weight being 11 1/4 ozs. It was grown in-doors on a moderately small but very healthy tree planted three years ago. This Peach had the delicate colours which the true Noblesse has when properly matured, and was the largest of its sort I have seen. Some few years ago I had the Bellegarde brought on very steady in a second Peach-house within a half ounce of this Noblesse, and, perhaps, some of your correspondents may favour us with an account of a still finer fruit.—J. STEVENS, *Malvern Hall, Solihull.*

WEEDS ON GARDEN WALKS DESTROYED BY ETHER RESIDUUM.

IN reply to an editorial query as to whether the acid would not injure the shoes, I beg to say that it is better that ladies with thin shoes should not for a few hours frequent the path: it is, therefore, better to apply the remedy in an evening. I should have mentioned that the acid emits a rather strong spirituous smell for a short time; but it passes readily away, and after all is not very disagreeable. I can vouch for the perfect success of the remedy. A friend, who was in the habit of constantly employing two women during the whole of the spring and summer months to remove the weeds with knives, now only requires the aid of a man and boy one day in spring and autumn, and his walks are entirely freed from the nuisance. I have myself only used it this autumn, but the success was complete.—THE COTTAGE GARDENER'S FRIEND.

THE SCIENCE OF GARDENING.

(Continued from page 374, Vol. XXIV.)

LASTLY, in this section of our researches we have to consider the ripening of seeds. This final operation of the plant's annual round of growth requires changes the exact reverse of those which have to be effected when the plant first commences existence—that is, when the seed germinates.

During a seed's germination, the usual chief operation is the conversion of starch into sugar; but during the seed's ripening the usual change is the conversion of sugar and gum into starch. During germination the necessary changes required carbon to be got rid of, and, consequently, as we showed whilst considering the phenomena, carbonic acid is emitted by the seed.

But during the ripening of seed—that is, during the conversion of its sugar into starch, no carbon need to be got rid of, for they are relatively composed as follows:—

| | Carbon. | | Hydrogen. | | Oxygen. |
|-------------------|---------|-----|-----------|-----|---------|
| Grape sugar | 24 | ... | 22 | ... | 22 |
| Starch..... | 24 | ... | 20 | ... | 20 |

So, as the seed approaches to ripeness, we gradually find more oxygen and water emitted by a plant in proportion to the carbonic acid and water absorbed than during the period of growth and flowering. This coincides also with Liebig's statement, who, on the supposition that starch is formed by the plant from carbonic acid and water, says that there would be required thirty equivalents of carbonic acid, and thirty equivalents of hydrogen derived from thirty equivalents of water, with the separation of seventy-two equivalents of oxygen. Of the vital process by which this is effected we know nothing, and can only compare it to the action of chlorine gas, which when mixed with water combines with its hydrogen and sets its oxygen free.

We have said much relative to the seeds of plants when considering the phenomena of germination in our first chapter, and we will only add here some of the results of experience recorded by Mr. Knight; premising that, although his observations were made upon the seeds of fruit trees, yet they are equally applicable to the seeds of all cultivated plants.

New varieties of every species of fruit will generally be better obtained by introducing the farina of one variety into the blossom of another than by propagating from any single kind. When an experiment of this kind is made between varieties of different size and character the farina of the smaller kind should be introduced into the blossoms of the larger; for, under these circumstances, Mr. Knight generally (but with some exceptions), observed in the new fruit a prevalence of the character of the female parent; probably owing to the following causes. The seed-coats are generated wholly by the female parent, and these regulate the bulk of the lobes and plantule: and he observed, in raising new varieties of the Peach, that when one stone contained two seeds, the plants these afforded were inferior to others. The largest seeds obtained from the finest fruit, and from that which ripens most perfectly and most early, should always be selected.

The trees, from blossoms and seeds of which it is proposed to propagate, should have grown at least two years in mould of the best quality. During that period they ought not to be suffered to exhaust themselves, by bearing any considerable crop of fruit; and the wood of the preceding year should be thoroughly ripened (by artificial heat when necessary), at an early period in the autumn: and if early maturity in the fruit of the new seedling plant is required, the fruit within which the seed grows should

be made to acquire maturity within as short a period as is consistent with its attaining its full size and perfect flavour: those qualities ought also to be sought in the parent fruits which are desired in the offspring; and the most perfect and vigorous offspring will be obtained, of plants as of animals, when the male and female parent are not closely related to each other.—(*Horticultural Society's Transactions*, i., 38, 165.)—J.

(To be continued.)

NEW BOOKS.

SCIENTIFIC FARMING.*—This little volume may be read advantageously, and with amusement as well as profit, by every one who has an acre of ground either under the spade or plough. Not that there is anything new in its pages, but truths too much neglected are stated ably and forcibly, and much useful information is collected and condensed in a small space.

For example:—"There is no good reason why the farms of England should yield crops so greatly inferior in comparison with what our market-gardeners produce. Professor Playfair, a reliable authority, has stated that the value of £250 has been produced from a single acre of market-garden ground in one year. Why, then, should not our farms be made comparatively profitable? That they are not so we all know, and the reason is obvious. The market-gardener is generally content to cultivate no more ground than his capital is equal to; while the farmer, on the other hand, is continually grasping at more land, when he has barely capital sufficient to farm properly what he already occupies. It cannot be too strongly urged as a truth, that no tenant farmer straitened for capital can ever farm well or profitably; and for parties in this predicament there is but one mode of extrication, which they ought not to lose a moment in adopting—viz., to restrict themselves to half the number of acres. By so doing, they would not only double their acreage capital, but lessen their expenditure, and be able to concentrate their energies with greater advantage. Moreover, by decreasing the competition for land, rents would necessarily become more moderate, and they would be thereby placed in a better position to secure the value of their permanent improvements than they are now. By resolutely adopting this prudent course, we should hear no more of such idle excuses as 'Can't afford it,' when improvements were suggested. We should then no longer look with pity on a solitary individual undertaking the labour of a twenty-acre field; but we should see some half-dozen hands employed upon it, in the various duties of draining, fencing, scouring, cleaning, and other operations, all essential to a good crop. True, the small farmer would have to pay more for labour; but, on the other hand, he would have to pay less for poor, police, and county rates; he would obtain larger crops, and thus be enabled to produce a larger quantity of beef and mutton, besides procuring thereby an extra quantity of manure, and consequently the saving of many pounds annually in the purchase of artificial fertilizers. In short, he would gain on all sides, to a much larger extent than would counterbalance the cost of extra labour employed.

"Mr. Mechi observes—and upon such a subject as this he is no mean authority—that 'the quantity of meat made on a farm per acre determines the quantity of corn grown.' And he adds: 'By putting a few questions to a farmer, I can almost immediately arrive at a conclusion as to his position, without visiting his farm. The first question would be, 'How much meat do you make per acre over the whole acreage of your farm?'

"This question has been solved by Mr. Thomas Dyke Acland, in the 'Royal Agricultural Society's Journal,' vol. xi. p. 666. He there shows that the largest corn-growing farmer in Norfolk, a most successful man, produces $4\frac{1}{2}$ score of meat on every acre of his land. Compare this with the general average of the farms of this kingdom, which certainly do not produce one score pounds of meat per acre. The more meat you make, the more manure you produce, and the more corn you grow. The common labourer is the best evidence on this point. With his patch of ground, about one-eighth of an acre, he knows that unless he keeps a pig to make manure, he cannot expect a crop. Therefore, he fattens one pig, which consumes three sacks, or twelve bushels, of barley meal, which at 7 lbs. of meal to 1 lb. of meat, would be 84 lbs. of meat, or four score on the one-eighth of an acre, or over thirty-two score per acre.—(*How to Farm Profitably*, p. 6.) While, with respect to corn produce, let us take a lesson from

* *Scientific Farming made Easy*, or the Science of Agriculture reduced to Practice. By T. C. Fletcher. London: Routledge & Co.

some of the cottagers in the county of Lincoln; and the fact I am about to state may be useful to those who may object to the comparison between farm and market-garden produce. Many of these cottagers, by means of their pollard-fed pig and spade culture, produce fourteen bushels of Wheat to the rood, or fifty-six bushels per acre, while our national corn-growing average hardly exceeds twenty bushels per acre."

Now, all this is perfectly correct, but the same was thus told 1800 years since by Columella:—

"It is a saying worthy of the Carthaginians, a most acute people, that the land ought to be weaker than the husbandman; for since of necessity he must wrestle with it, if the ground prevail the owner must be crushed to pieces; nor is it to be doubted but that land of a large extent not rightly cultivated will yield less than that of a narrow extent exceedingly well cultivated. Wherefore, after the expulsion of the kings, those seven jugera, which Licinius the tribune of the people distributed to each man, yielded a greater revenue to the ancients than our largest fields which lie fallow do now."

"One Pavidius Veterensis had two daughters, and a piece of land planted with Vines; of which he gave a third part as a portion to his eldest daughter when she married; and this notwithstanding, he used to gather an equal quantity of fruit out of the two-thirds of the same land. Afterwards he gave his second daughter in marriage, with the half of the land that remained; nor did he thereby suffer any diminution of his former income. What inference is to be drawn from this? That the third part of his farm was afterwards better cultivated than the whole of it had been formerly."

We have recently seen this anecdote of the Roman Pavidius told as having happened to a Norfolk farmer in the days of one of our Georges!

Fully acknowledging the justice of the time-honoured maxim, that the cultivator should be master of his land, and not the land be master of its cultivator—in other words, that his capital and labour should be in excess, we next pass on to the chapters which descant on the habits and food of plants, manures, sustenance of cattle, &c., and in all we find the same combination of the useful and amusing; but as we go along we note some mistakes which deserve correction.

The Fly Trap (*Dionæa*) is not "another species of the same plant," the Sensitive Plant (*Mimosa*), page 11.

Oxygen and hydrogen unite when electrified in contact; they do not "mutually decompose," page 22.

Acids can be formed without oxygen, though stated otherwise at page 21. Chlorine and hydrogen form muriatic acid.

There are some minor errors, but we are not inclined to be very critical with a book which we consider calculated to be very useful; and to show that we are more desirous to quote what we approve than what we consider faulty, we will make one more extract with which we fully agree.

"I do not believe there is any specific manure for plants apart from that of farmyard dung,—i.e., no manure that could possibly supersede it, even though it could be manufactured at half the cost. This manure never fails on its own account, though it is more or less valuable accordingly as the cattle by which it is made have been well or ill fed. The stomach of the animal is Nature's own laboratory, and chemical changes are there effected in a manner far superior to those produced by human ingenuity. The application of farmyard dung alone will bear constant repetition—the land never tires, never grows sick of it. Formed by the acid fermentation of vegetable matter of almost every description, it is by such process converted into one homogeneous substance, suitable for every soil, and fitted for the nourishment of every known plant. Were it otherwise, Nature would have proved herself a bungler, and vegetation would, if not altogether, at least partially, have ceased to exist."

THE ORCHARD-HOUSE.*—We have now before us the eighth edition of Mr. Rivers' "Orchard-house," an evidence that the interest in this branch of fruit culture is not on the decline. In this edition there are several hints that were not to be found in former impressions—such as the discontinuing the syringing of Apricots, and extended remarks on the cultivation of Oranges for fruit. That this latter subject is one that will ere long engage the attention of fruit cultivators there cannot be a doubt. When the right sorts are obtained, it is no more difficult to grow our own Oranges than it is to grow our own Grapes. Formerly it was customary to import Orange trees from Italy and Spain for

the mere purpose of decoration or amusement, and so long as they were Orange trees, that was sufficient, no matter how sour or worthless the fruit might be, or whether they ever produced fruit or no. But that Orange trees may be grown advantageously, and that we may have our desserts furnished with fresh fruit of this delicious description, is fully shown in this new edition of the "Orchard-house."

TROPÆOLUM ELEGANS AND STAMFORDIANUM AS BEDDERS.

IN THE COTTAGE GARDENER of the 11th of September, there is an opinion expressed to our friend Mr. Beaton that *Tropæolum Stamfordianum* is far superior to *elegans* as a bedder. My opinion is that it is not by any means its equal. I have them both in beds, and also in stripes on borders, and must certainly give the preference to *elegans*. It is decidedly a more distinct colour than *Stamfordianum*, and can take the place of a scarlet bed in the flower garden. *Stamfordianum* cannot take the place of any distinct colour.

Elegans, also, throws its flowers just high enough above the foliage to show every blossom to perfection. The foliage of a plant is also—at least, generally so—of as much importance as its blossom; and with me the foliage of *Stamfordianum* soon turns yellow, and at no time is of that beautiful green that *elegans* is: and with me the flowers of *Stamfordianum* do not stand so erect and decidedly in every situation that I have seen. It is of much coarser growth.

In writing these few remarks I wish you to understand that I have no personal motive to serve; but as there are many that have not got either, and would necessarily be guided by the opinion of others, I have given mine as to the character of both. With me *elegans* is now (Sept. 16th), as beautiful as ever; and as it does not seed so freely as *Stamfordianum*, will, of course, to some extent account for that worn-out appearance the latter variety exhibits in most places that I have visited.

I have also another variety, called *Triomphe de Hyris*—a yellow flower with dark spots; it will, no doubt, prove very valuable as a yellow bedder, but must not be planted in rich soil, or it will grow rather out of bounds.

They are all very beautiful, and make excellent pot plants. Or, what is better, get pans ten inches wide and about five inches deep; put one plant into each; stick in each pan two or three rough branches, so that the plant is in height about double the width of the pan; you will very soon have one mass of blossom, not only for days or weeks, but months. Give them plenty of water, and once a-week get some warm soft water, and dissolve some of the Gishurst Compound; so that, when you have added it to the quantity you require, it is about an ounce to the gallon. You will then be rewarded with a complete mass of bloom and a beautiful green foliage the whole of the season—in fact, they continue to bloom all through the winter.

By-the-by, I have found that all soft-wooded plants that receive an occasional watering—say once a-week, of the Compound dissolved at the rate of about two ounces to the gallon (let it be rain water), do much better than those that have had other stimulants. If you give them a mixture of this kind now and then they will not disappoint you by what they give in return.—G. D., *Hammersmith*.

STRIKING CUTTINGS.

IN one of our first numbers the secret came out that there was no more difficulty in striking eyes of native than of foreign Grapes, provided, after they were cut ready for planting, they were suffered to lie mixed with damp moss for two weeks in a place secure from drying. Here they form a slight callosity, and, when planted, *all* grow. This hint, we have reason to know, has been extensively acted on, and thousands of dollars have been made through the information thus given. The hint, also, given by other of our correspondents, about leaving cuttings of such things as *Cotoneasters*, *Prunuses*, &c., in dark cellars in dry moss, where they would push roots freely; the accounts of striking in sphagnum moss, and many other details of practice and observation, have all pointed conclusively to one great principle—namely, that "callus can be formed in any cutting before being put into the soil," and where that is effected it can readily be made to root.

It is, in fact, now become well known to some, we may say many, and our most skilful propagators, that all cuttings can be

* *The Orchard-house*, or the Cultivation of Fruit Trees in Pots under Glass. By Thomas Rivers. Eighth Edition. London: Longmans.

made to callus, and then be made to grow. Apples, Peaches, Cherries, and Plums, are now freely struck, by several in our immediate vicinity, from cuttings; and many kinds of trees, once thought impossible to propagate in that way, are now raised so very freely.

In our own experiments we have found a common preserving bottle excellent for callusing hard cuttings. A sponge is pushed tightly into the bottom of the bottle, and water poured on. Then all the water is drained out that will go out, by inverting the bottle, and the cuttings placed loosely in. No cork is placed in the bottle, and evaporation takes place slowly, and the cutting soon forms the desired callus.

The whole secret, in fact, is in allowing free access of air to all parts of the cutting, at the same time taking care that evaporation shall not be so excessive as to dry up the cuttings.—(*American Gardeners' Monthly*.)

WHAT TO LOOK FOR ON THE SEASHORE.

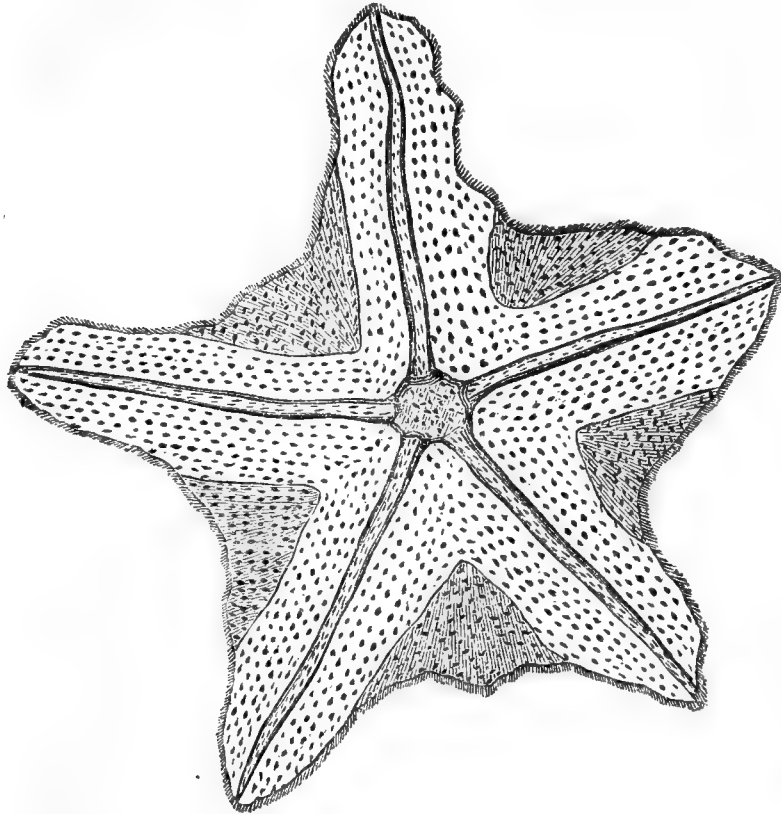
(Continued from page 390, Vol. XXIV.)

ECHINODERMATA (Continued).

GONIASTERIÆ.

The third group of the Asteriadae, so called from the angular outline of the creatures composing it; which appearance is caused by the distances between the rays being filled up by broad lobes or membranes.

THE BIRD'S-FOOT SEA STAR (*Palmipes membranaceus*).—This is a very remarkable species, and is the flattest and thinnest of

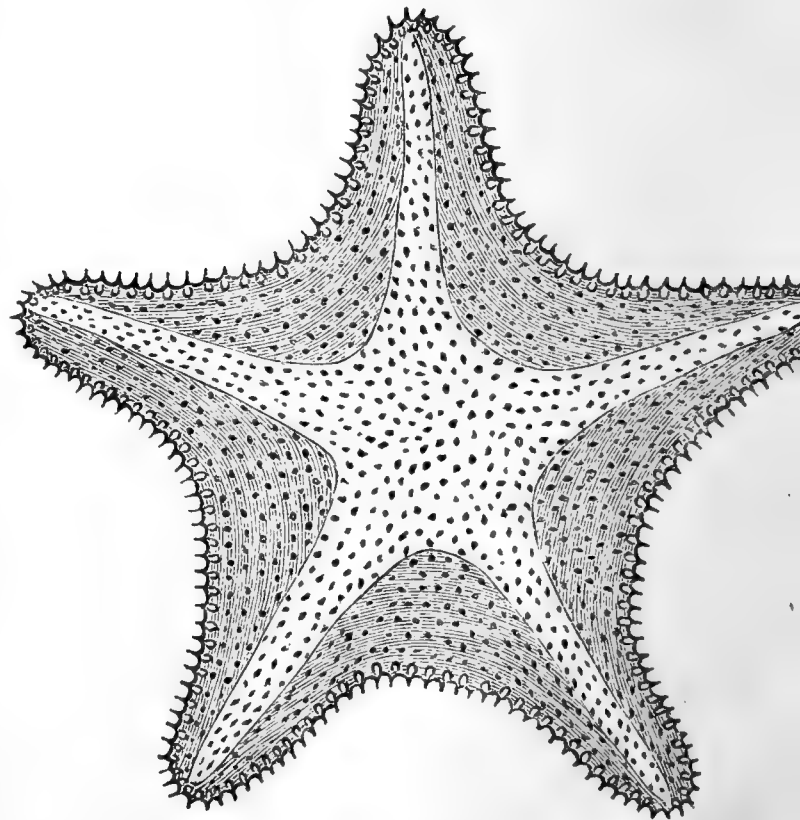


all its class. When alive it is flexible, and very much resembles a piece of leather in that respect. It is in colour white, having a red centre and five red rays proceeding from the disk to the angles, the margin being in most cases bordered with red also. The upper surface of this Star Fish is covered with spine-bearing tubercles; but they are not arranged on all the parts alike—on the white portion, for instance, they occur in regular rows, the larger ones being near the disc, being very minute on the margin; whereas on the red disc and on the rays they are irregularly placed, much smaller and closer together. Each marginal row of tubercles has a tuft of spines at its extremity which project beyond the outline of the body. These spines are sharp, short, and very numerous. In size it averages about five or six inches in diameter. The Bird's-foot Sea Star, although long known as a British specimen, is somewhat rare, although they are frequently taken in deep water by dredging. The Irish Sea, off the coast of the Isle of Man, would seem to be a favourable locality for finding them; but they may be met with off Weymouth, also on the Cornish coast, and on the coast of Ayrshire in Scotland.

THE GIBBOUS STARLET (*Asterina gibbosa*).—The gibbous or humped Starlet is the smallest of the British Asteriadae—a large specimen only measuring an inch in diameter. Professor Forbes states that the largest he ever saw was but one inch five lines across. It is widely distributed on the English coasts, although it seems to be more attached, if not entirely confined, to the western and southern portions. The body of this animal is pentangular, with the angles produced on the upper surface. It is covered with tufts of short thick spines, varying in number from two to six in each tuft. These tufts are placed in regular rows—those on the rays proceeding from the disc to the angles. In colour it is most commonly of a greenish yellow, occasionally tinged with red, and sometimes of a brownish tint. The localities which the gibbous Starlet chiefly affects are, as before stated, to the west and south of Great Britain. For instance: in England it is found off Cornwall, among the limestone rocks of the Isle of Man on the ebbing of the tide, and in Herne, one of the Channel Islands. In Scotland it is met with on the gneiss shores of Ross-shire; and in Ireland all round the coast indiscriminately, among the rocks at low water; such, indeed, seeming to be its favourite haunt in every locality. This species is never to be taken by the dredge.

TEMPLETON'S CUSHION STAR (*Goniaster Templetoni*).—The Cushion Star has a very convex body. When alive it is very smooth and slippery, but on being dried it becomes grained and reticulated. It is quite destitute of true spines, with the exception of a very few at the angles; but in their place the surface is provided here and there with little sharp spinules, which are described as the remains of certain small stalks, which give to the living creature a curious shaggy appearance. The eyes, which are situated on the under part of the Cushion Star, are also unprotected by spines. The colour of this species is very rich and beautiful. It is a bright scarlet above and straw colour beneath: the upper surface is occasionally marked with a dusky white. The largest specimen which has come under the hands of Professor Forbes measured three inches and a half across, although in ordinary instances it is little more than half that size. Templeton's Cushion Star appears to be chiefly an Irish species; although it has been found in Bute and Arran, on the Ayrshire coast, and on the shores of Orkney. It has also been dredged on the north-west coast of the Isle of Man, where it lives among the scallops in deep water.

THE KNOTTY CUSHION STAR (*Goniaster equestris*).—This is one of the most beautiful of our native Star Fishes, and at the



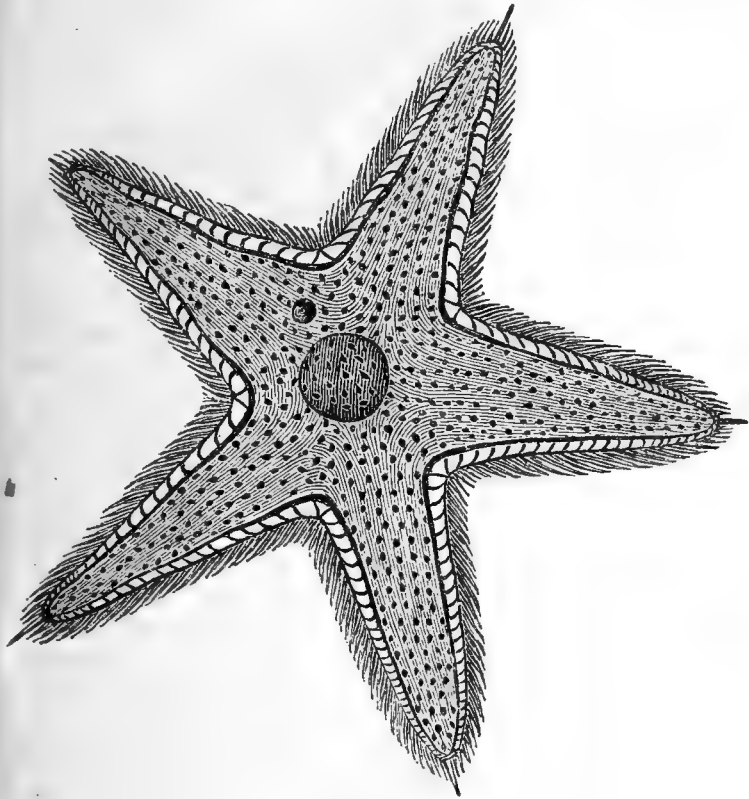
same time one of the rarest. It has been known to attain a diameter of nearly ten inches. The form is pentangular, and on the upper surface is covered with plates nearly circular, surrounded by very minute tubercles. In the centre of each of these plates are placed smooth tubercular spines, varying from

one-eighth to the one-thirty-second part of an inch in diameter, and of about the same height. It is chiefly, when quite fresh, of a bright red or scarlet colour; but on keeping, the colour deteriorates into a faint and dirty brownish yellow. The Knotty Cushion Star has been said to be exclusively confined to the northern coasts; but this is manifestly an error, since it has been found on the coast of Cornwall.

ASTERIÆ,

The fourth group of the Asteriadae.

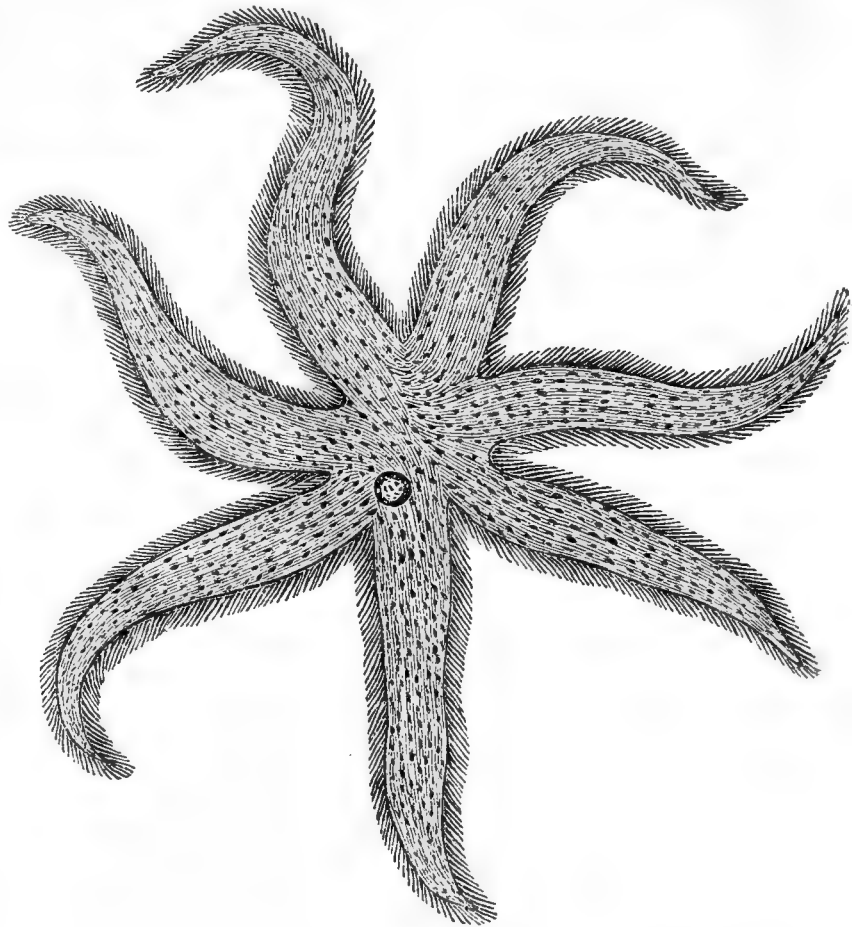
THE BUTTHORN (*Asterias aurantiaca*).—The genus *Asterias*, as being more regular in its shape than any other Star Fish, is



in consequence, one of the most elegant of the tribe. Britain presents but one native specimen—the Butthorn. It has five equal lance-shaped arms with straight sides; these sides are bordered transversely with oblong plates. The disc is very broad, and the whole surface, disc and arms, within the border-plates, is covered with tubercles bearing groups of small spines, so closely packed as to give it a very compact appearance. These tubercles are irregularly placed in the centre of the arms and disc, but on the sides they present a more orderly arrangement. The disc has a prominent centre. The plates on the margins of the arms are also prominent and rounded. The rays are fringed by a border of numerous, long, lance-shaped, flattened spines; and on the under surface, between these and the long spines which border the avenues, is a broad space covered with thickly-set, transverse plates, each crowned with seven or eight oblique rows of short, flat, club-shaped spines. This species usually has a diameter of from three to five inches, although it occasionally will measure six. Each of its five rays is turned up at the extremity, and presents a circular tuft of blunt spines, forming the eyelid. The Butthorn varies considerably in the form of its rays, in the number of their marginal plates, and in the presence or absence of the spines upon them; and this variation has been the means of leading zoologists to the creation of spurious species. It varies also in colour: sometimes it is of a brick-red above, and sometimes of a yellow or a light pink, with purple tips to the rays; occasionally the whole of the upper surface will be covered with a glutinous, adhesive substance; but this is by no means usually the case. The Butthorn is very generally distributed. On the southern coast of England it is very common. It is found abundantly at Teignmouth, and again in the north at Scarborough, Berwick-upon-Tweed, and on the Scotch coasts. It occurs also in Orkney and Shetland, and off the coasts of Down and Antrim in Ireland. It is mostly found in deep water; it being a rare occurrence to meet with a specimen on the shore, although the violence of the waves may occasionally cast one there. The Scarborough fishermen observe a singular superstitious custom with respect to this creature, which is given by Professor Forbes, on the authority of Mr. Bean, in these words:

—“They call this species the Butthorn. The first taken is carefully made a prisoner, and placed on a seat at the stern of the boat. When they hook a But (Holibut), they immediately give the poor Star Fish its liberty, and commit it to its native element; but if their fishery is unsuccessful it is left to perish, and may eventually enrich the cabinet of some industrious collector.”

THE LINGTHORN (*Luidia fragilissima*).—This is the largest of all the British Star Fishes, and perhaps the most remarkable.



It is distributed all over the coasts of Britain. When full grown this creature will measure two feet in diameter, and would seem, from fragments found occasionally, to exceed that size. The number of its rays varies from five to seven; they are quite flat, and are usually about five times as long as the disc is broad. In most specimens they taper gradually to a point, although in those found on the eastern coast they are rather broader towards the middle. The upper surface both of rays and disc is covered with tubercles, each having a diverging circle of from six to eight spines. The margins of the rays are bordered with rows of long rounded spines placed on regular transverse ridges, the uppermost ones being the thickest. The eyes are placed at the extremities of the rays in the centre of a ring of spines. It is of a brick-red colour above, varying in intensity: the under surface and the lateral spines are of a straw colour. This species is by no means constant in the number and proportion of its rays; they are, however, *always* either five or seven—no instance having occurred of a specimen being found with six or eight. The Lingthorn approximates closely in one peculiarity with the Serpent's-tails—namely, in the strange power it possesses of casting off its arms or breaking them into pieces. The incident of the bucket, quoted from Professor Forbes in a previous chapter, had reference to one of this species.

When young the Lingthorn is not nearly so brittle as those fully grown, and the five-armed variety seems less so than the seven-armed. It has the power, in common with other Star Fishes, of reproducing its members. The species is peculiar to Britain, and may be found in Berwick Bay, off the coast of Orkney, and on the northern shores generally. It is met with at Scarborough, although not common there. In Ireland it is only found on the south-west coast, and always with seven rays; off the Isle of Man also, always with seven arms. It is sometimes caught in the Irish Sea with only five arms.

This creature completes the Asteriadae. We next proceed to Echinidæ—Sea Urchins or Sea Hedgehogs.—W.

(To be continued.)

ROSES FOR A SMOKY LOCALITY—SPERGULA—PRUNING CAMELLIAS.

BE kind enough to give me the names of ten or twelve Roses which you think will do well in a very smoky part of the suburbs, Mile End, two miles from the Exchange. The garden is rather open for the situation. Soil light loam, approaching to the usual black compound of suburban gardens; but I have considerably improved it, and bedders do very well in it, and I intend to get some good yellow loam for the Roses. I am told the Cabbage, Damask, Maiden's Blush, and Tuscan, bloom well so near town, if kept well washed overhead; but I should be loath to bid farewell to Roses so soon in the season, as I must do if I grow only summer ones. I intend to grow them only on their own roots, which will give me a better chance of success.

My Camellias, which were beginning to get acclimatised to my situation, I fear will many of them make no buds for next season. The ends appear to be making second shoots instead of bloom, I suppose owing to the wet summer. I nip them off when they give signs of being a shoot, in hopes bloom-buds will come in the axils of the leaves lower down.

I am delighted with *Spergula* as an edging four to six inches wide, because of its delightful green. Do not, Mr. Editor, smile at my cockney delight in greenness, but tell me if I might safely plant it, being situated where I am, without making a winter's trial of a small part first, and so losing a season.—J. R.

[The best Roses for smoky gardens near large towns and cities are the strongest and freest bloomers of the Hybrid Perpetuals, and they on their own roots, and after the first two years, or say when the plants get well established. They must not be pruned back one-half so close as worked Roses, or Moss and Cabbage Roses on their own roots. 1. Baronne Prevost. 2. Général Jacqueminot. 3. Madame Laffay, very old, and very best for smoke and dirty atmosphere. 4. Augusté Mie. 5. Duchess of Sutherland. 6. Empereur de Maroc. 7. Léon des Combats. 8. Mathurin Regnier, a splendid thing. 9. Comtesse de Chabillant, ditto. 10. Caroline de Sansal. 11. Alexandrine Bachmetoff. 12. Anna Alexieff, one of the newest for all this smoke and fuss, and one of the very best. Some of these ought to make four-foot shoots after a while, and one foot only to be cut off in winter pruning; but a summer thinning in July, if on their own roots.

Spergula is a delightful green as you say, but whoever heard of stopping the summer's growth of Camellias to cause them to form flower-buds in the axil of the leaves? Camellias are the first plants for a smoky locality, and the last to be stopped in summer; it entirely prevents blooming next year.]

HORTICULTURAL SOCIETY.

FLORAL COMMITTEE.—A Meeting of this Committee was held on Thursday last. Rev. Joshua Dix in the chair.

Messrs. Carter & Co., of Holborn, sent cut flowers of some very fine varieties of *double Zinnias*. These are large and densely double, and include every shade of colour. At a Special Meeting held at Chiswick the week previously, a similar collection was exhibited from Messrs. Vilmorin, of Paris. The Meeting awarded First-class Certificates to both exhibitors. Messrs. Carter also exhibited cut flowers of a new species of *Oenothera*, with large, bright, yellow flowers, and which is said to grow only two feet high. This received a Commendation.

Mr. Rawlings, of Bethnal Green, exhibited a seedling *Dahlia Juno*, a pretty rosy lilac full flower, and very constant. It has been well exhibited all the season, and was Commended. Mr. Pope, Chelsea, exhibited a fine, bright, rosy crimson seedling *Dahlia*, called *Lord Derby*—a beautiful thing in regard of colour, but it came short of the florists' standard of shape, and hence was only Commended. Mr. Edwards, of Hilperton, near Trowbridge, sent *Dahlia Beauty of Hilperton*—a large, neatly formed, light purple, to which a First-class Certificate was awarded.

Mr. Standish, of Bagshot, sent a collection of seedling *Gladiolus*, from which the Committee selected *Herr Rosenberg* and *Mrs. Blount*. The former, a fine, brilliant, rosy carmine, was Commended for its colour; and the latter white, with bold, dark, crimson-purple markings on the lower segments, was also Commended. *Mrs. Duffield*, a blush-white striped with rose, and having the lower petaloid segments deeper coloured, deserves favourable mention; as also Signor Jacksoni, a creamy yellow with purple markings.

Mr. Crowder, nurseryman, Horncastle, sent several plants of a seedling pyramidal Yew, which differs entirely from the old *Taxus pyramidalis*, by being less spreading and diffuse, and from the Irish Yew by being less compact and formal. This, which is called *Taxus baccata*, var. *erecta*, received a First-class Certificate.

Messrs. Garaway & Co., of Bristol, sent *Tropæolum Garibaldi*, a variety with the habit of *Lobbianum elegans*, but of a deeper or crimson-scarlet colour, for which it received a Commendation.

Mr. Turner, of Slough, sent Seedling *Dahlia Princess of Prussia*, a medium sized bright yellow flower of good form, which received a Commendation, as did also *George Parker*, a very pretty blush with whitish centre, the florets just tipped by a purple line-edge, and of compact form.

Primula sinensis carminata splendens, grown in the Society's Garden, to which it was sent by Mr. Benary, of Erfurt. It is of a new and quite distinct colour, being a light salmon-rose, and deserving of a commendation as the origin of a new strain.

FRUITS OF 1860 AT BURNTWOOD GRANGE.

UNFORESEEN events often happen when not in the least expected, thwarting the intentions of the most positive. Who, the first few days of May last, would have believed had they been told that we should have had such an ungenial summer as we have had? Is there one amongst the whole gardening community that can say their designs have not been frustrated? Take a glance to right hand or left, into our neighbours' gardens or our own, and failure in some shape or other meets the eye.

Much might be said about it in the kitchen-garden department, while others think they have suffered most amongst their fruit. Few, if any, have escaped with their bedding stuff; and the flower gardens might be said to have been clad in anything but their usual bright garb; and under glass many have had their Vines mildewed this season in houses which have never shown the least symptoms of the disease before.

Through the fine weather that we have lately had, the agriculturist has seemingly been electrified from north to south; while it has supplied the horticulturist with jolly ripe fruit to lay by in his storehouse. The early part of August the greater portion of the wall fruit here was, comparatively, as green as grass, and I was one amongst many others that thought it impossible for the fruit to ripen this year. This was the dark side of the picture, which I am happy to say is past, and we are left, after wading through so many serious difficulties, gazing on, and not only gazing on but in full possession of the bright side at last. It is quite as unexpected an event, as the wall-fruit account will very soon show forth here.

It was one of those unforeseen and unexpected events that stepped in and hindered me from finishing my article on "Mildewed Vines at Chippenham." I had to take my kit, bairns and all, and journey eastward above five score miles. This, also, was what hindered me from replying at the time to the remarks that fell from my former employer's pen. Had I continued the article according to intention there would not have been the remotest chance for one word about misstatement; and as to the management of or credit about the Vines, one thing is certain. In 1858 they were totally destroyed, as I before stated, by mildew; while in 1859 they were what we gardening chaps call "up to the door." Also, as to inarching Vines, I am requested to state by one who perfectly understands and knows well how to appreciate a man's labour, that they are done here to his entire satisfaction, as well as mine, and not only the Golden Hamburgh, but the Muscat Hamburgh as well—that person is my present employer.

On a gentle declivity, about seven miles south-west of the centre of the metropolis, on a spot where a most picturesque view of Wimbledon Park and Common is commanded, also a view of the trains that pass and repass as far as the eye can reach on the South-western or Southampton line, stands Burntwood Grange, the residence of C. M. Major, Esq. It is entered from the main road that leads from Clapham to Wimbledon by a lodge, in that part of it known as Garrot Lane; and whoever walks down the drive, and notices the various species of American and other specimen plants which meet the eye must see at a glance that no expense has been spared for the decoration of the grounds; but rather that money has been spent in the most liberal manner—in fact, everything besides on the premises has been done in the same bounteous style. Turn the eye which

way we will, all seems to be composed of links of the same chain.

These must all be noticed in their proper place, so we will take a peep into the vinery at once, which is a lean-to house 36 feet long by 18 feet wide, and 16 feet high at back. The Vines are old, with the exception of the Golden Hamburgh and Muscat Hamburgh, which were planted last year. The old ones are the Hampton Court Hamburgh, Wilmot's Black Hamburgh, Dutch Sweetwater, and Chasselas Musqué. Two years ago the fruit here was destroyed by mildew; last year there were only a few bunches affected, and this present year, on the 13th of May, they fell under my care, and this is the treatment they have received. They broke very well, but there is at present no particular style of growth; it is neither the long rod nor the spur, but what might be termed a medley training. As I before said, the Vines broke well and regularly; they showed fruit freely, and this set with the thermometer ranging from 45° to 50° Fahr. Immediately after the fruit was set extra heat was supplied, and as the heat was increased extra feeding was supplied, so that from about the 20th of May to the middle of July they were what might be termed luxuriance itself; they threw out rootlets from almost every joint of the canes. On the 24th of May I inarched the Golden Hamburgh on the Hampton Court Hamburgh, two different Vines, or rather two different branches of the same Vine, leaving a good fruit-bearing cane between the two that are inarched on its own roots for next year. These were beautifully united in twenty-eight days, the sap flowing as it was then. After these were united on the 20th of June, the Muscat Hamburgh was inarched on Wilmot's Black Hamburgh, and they are now united equally as well as the former variety, without the least detriment to the fruit that was then growing on the Vines, which was no small quantity. These Vines while in their growing state—that is, from the time the fruit was set until it began to colour, received above 300 gallons of various kinds of manure water, which helped them to an extent almost beyond description.—A. J. ASHMAN.

(To be continued.)

AUCTION OF BULBS.

WE have had a sale here of Dutch bulbs, some of which were described as *Tacettes*, *Aäronskelk*, *Dipcadæ suprema*. Auctioneers, gardeners, and amateurs all are at fault as to what they are. Can you help us?—NOTTINGHAMENSIS.

[We fear you have all been imposed upon. *Tacettes* is nothing more than a misspelling of *Tazetta*, an old botanical name for the *Polyanthus Narcissus*. *Aäronskelk*, or Aaron's-cup, is probably a Dutch local name for the Hooped-petticoat *Narcissus*. Of the other name we can make out nothing. We hope you have not been victimised; at all events we thought the men of the north were more wary than to buy unknown bulbs from unknown vendors. These vendors are quite safe if they attach to the commonest bulb a name by which it is known in any place upon the earth's surface.—EDS. C. G.]

BEDDING GERANIUMS AND THEIR TREATMENT LONG AGO.

I READ with pleasure Mr. Robson's remarks under the above heading, for while giving full credit to the rapid advance of the science of gardening in late years, I cannot forget how the foundation was laid in days long since gone by.

One of the most effective beds I ever remember was arranged in the year 1825, a large oval with the old scarlet Horseshoe Geranium edged with white Petunia, the latter supported by an ornamental wire guard eighteen inches high, inclining outwards. In the same garden at Theobalds, in Hertfordshire, ribbon-borders were to be seen—at least so far as that term may be applied to a long border with colours in lines. Dahlias, scarlet Salvias, Heliotropes, Horseshoe Geraniums, the yellow Celsia, and white Petunia, were thus employed with generally-acknowledged great effect.

In the year 1832 again, many of your readers may recollect the striking appearance, at Alton Towers, of a line of single scarlet Dahlias many hundred yards in length.

Great changes have, indeed, been wrought in our gardens; but as regards bedding Geraniums, and, in some respects, ribbon-borders, the progress has been a gradual one.—W.

TO CORRESPONDENTS.

MR. J. TURNER, NEEPSEND, SHEFFIELD (*R. French*).—We think our old correspondent must be dead, for we have written to him repeatedly without obtaining an answer. At the same time some of his family must be surviving and do not act honestly; for we hear of postage stamps being enclosed for the garden scissors which he used to supply, and that, although the stamps are not returned, the scissors are not sent. We wish some of our Sheffield readers would oblige us with some information relative to Mr. Turner.

FLOUR OF THE TIL (*John Thompson*).—Where can this be obtained? It is the flour of the seed of *Sesamum orientale*, and was said to be fed upon by bees. In a year like this, when bees are generally starving, any suggestion of a cheap bee food will be most welcome.

ORANGE GIN.—A correspondent has obliged us by sending the following recipe:—Take the rinds of eight Lemons, eight Seville Oranges peeled very thin, and three lbs. of loaf sugar. Steep all together for three days in one gallon of gin. Let it stand in rather a warm place, stirring it occasionally during the time. Strain it off and bottle it. A very small piece of Hay Saffron to colour it is an improvement. The rinds of the fruit, after making the liqueur with the pulp, make excellent marmalade.

PLANTING SPERGULAS—CALLA ÆTHIOPICA—AGAPANTHUS (*H. B.*).—This is a capital time to plant out Spergulas, and on to the end of October; but in October the plants must be bigger, or of a larger size, and they must be pressed down after every frost. If Calla (*Richardia*) æthiopica has been in growth since last March or April it is now time to go to rest; but some of ours have only begun growing about the middle of August, and these will grow on till next May, then rest and start again in August. There is a very great secret in flowering the Agapanthus in 48-sized pots; for nobody, as far as we know, has ever found it out. But if the Fates should prove so kind as to favour your experiment, just tell us about it.

BOOKS (*J. H. Bennett*).—In "Flower Gardening for the Many" you will find several plans which succeed well with bedding-out plants; there are also many other plans dispersed throughout our back volumes. For rustic woodwork there is no publication superior to Ricauti's "Sketches for Rustic Work." It was published by Carpenter, Old Bond Street.

HARDY FERNS (*Mrs. C. B. Clough*).—The Fern is one of the many forms of *Lastrea dilatata*; but we cannot say, without seeing an entire frond, whether it is or not one of the named varieties of that species. *Lastrea uliginosa* is also called *L. cristata* var. *uliginosa*, and sometimes, though very rarely, *Lophodium uliginosum*. *Oncoclea sensibilis* is a very beautiful hardy Fern; and you may add with satisfaction the following sorts:—*Adiantum pedatum*, *Cyrtomium falcatum*, *Dicksonia pilosiuscula*, *Lastrea noveboracensis* and *Sieboldii*, *Lomaria chilensis*, *Osmunda cinnamomea* and *spectabilis*, *Polystichum acrostichoides* and *Braunii*, *Struthiopteris pennsylvanica*, *Woodwardia areolata* and *virginica*.

VERBENA SEEDLING (*D. N.*).—We had one truss on your plant which was a shade deeper than Lady Middleton, but no Verbena could be judged this season. Secure the shoot on which the double flowers came. We have not seen a double Verbena. The old Helen Verbena—a very strong plant, with large, heavy, pink blossoms—we do not recollect to be sweeter than many more of them. We only want the *teucrioides* of all the old Verbenas since we were fortunate enough to pick up *melindris*.

VARIEGATED VERBENAS (*T. Palmer*).—Mr. Beaton is much obliged, but neither these nor variegated Petunias are worth cultivating.

HIPPEASTRUMS (*Jas. Gunson*).—We do not know the hybrids you allude to. There are several races of that cross in cultivation—that is, between *Gesneras* and *Achimenes*. Of *Amaryllids*, the *Hippeaster* section of the family is what you require; and these have been so crossed and so improved, that the high stove evergreen ones are out of date, and very few are now sold but resters, or winter resters of them. Collections of twelve kinds are offered of the very best sorts, and that would be the best way of marketing for them. The following twelve are first-rate, but the price may be twice as much as for another dozen of equally good ones. This subject requires care. 1, *Vittata amabilis*, and 2, *grandiflora*, 3, *ornata*, and 4, *pagoda*, 5, *pulcherrima*, and 6, *aulica venusta*, 7, *Johnsoni superba*, and 8, *striata*, 9, *Ackermanii*, 10, *Ackermanii pulcherrima*, 11, *Wheeleri*, and 12, *spectabilis*.

VARIOUS (*Ebor*).—We do not know *Mutisia clematidis*; but all the rest of the *Mutisias*, while they were in general cultivation, succeeded better under the treatment given to our hardy *Smilax* than by any other—namely, by cutting them down every winter to the crown of the roots, to give them an intermediate-house temperature in summer, never to train them otherwise than perpendicular, and to allow them to fasten themselves to their supports by their very curious tendrils. All that, except the temperature, will suit *clematidis*; and if you know its climate you want no more now. *Primula capitata* is on our own list of desiderata, which none of our friends can fill up: it is lost at Kew. The scarlet Brazilian Pine Apple is in some private collections, but we have seen none of it on sale about. Perhaps this notice will turn it up along with *Primula capitata*.

NAMES OF FRUIT (*H. K.*).—Your Pear is *Downton*. The cold ungenial weather is the cause of your Walnuts dropping, and not the drain, which is too far away to affect the tree.

POULTRY AND BEE-KEEPER'S CHRONICLE.

POULTRY SHOWS.

- OCTOBER 4th. MIDDLETON AGRICULTURAL. *Sec.*, Mr. T. Mills. Entries close September 27th.
OCTOBER 9th, 10th, and 11th. WORCESTER. *Hon. Sec.*, Mr. G. Griffiths.
NOVEMBER 7th. DEVIZES AND NORTH WILTS. *Hon. Sec.*, Geo. Saunders Sainsbury, Rowde, Devizes. Entries close October 13th.
NOVEMBER 21st, 22nd, 23rd, and 24th. WEST OF SCOTLAND ORNITHOLOGICAL ASSOCIATION, GLASGOW. (Pigeons and Canary Birds.) *Sec.*, Thos. Buchanan, 74, Argyle Street, Glasgow.
DECEMBER 3rd, 4th, 5th, and 6th. BIRMINGHAM. *Sec.*, Mr. John B. Lythall, Offices, Unity Buildings, Temple Street, Birmingham. Entries close November 1.
DECEMBER 6th. HULL AND EAST RIDING. *Sec.*, G. Robson, 25, Waterwork Street. Entries close November 22nd.
DECEMBER 21st and 22nd. HALIFAX PIGEON SHOW. *Sec.*, D. R. Edgar. Entries close December 8th.
N.B.—Secretaries will oblige us by sending early copies of their lists.

WHAT DISQUALIFIES A BIRD FOR EXHIBITION.

THE continual receipt of letters from correspondents asking what are and what are not disqualifications in exhibition poultry, induces us to give some general instructions on the subject. It will be almost a truism to say a pen can never be too good to enter the lists, and it is not less a verity that judges will tell you they never yet found a perfect one. Perfection is as rare in fowls as in human beings, and this may encourage many a beginner and many an exhibitor whose hopes have been low, when he has seen the one fault in the prize pen elect. The eye always seeks an unpleasant object; and when the pen from which great things are expected is put up for close scrutiny, although the owner may speak only of its merits to his friends, he must, if he tells the truth, confess he sees only one great defect, and, believing judges will do the same, discouragement follows.

Having stated our opinion that no pen is faultless, we will now have to do with the faults themselves. They are of two kinds. We will call them fatal and venial. Those in the first category are those that at once outweigh all merits and disqualify a pen. The second are those that fowls have in common with others, and, therefore, suffer the same comparison as merits. In the first may be classed the absence of the fifth claw on one foot of a Dorking; a falling comb in a Spanish cock, or a crooked one in a Cochin hen; spikes and gills on the head of a Polish cock; streamers in the tail of a Sebright Bantam, or a hen tail in that of black or white birds of the same breed; a black breast in a Spangled Hamburg or a Polish cock, or a splashed one in a Grouse Cochin cock; five claws where four only are correct; four where there should be five; mixture of colour in the legs of the fowls composing a pen; a crooked breast in a Game cock; a white breast in a Polish or Spangled Hamburg cock; light hackle in a Spangled, and dark one in a Pencilled Hamburg.

Circumstances may, however, make that venial which might have been fatal. For instance: imagine a class so constituted that no pen was really meritorious, and yet none so bad as to call imperatively for disqualification. It must then come to a weighing of merits and demerits. "In a nation of blind people, he who has one eye is king." It is necessary in this case to take each bird to weigh its disqualifications separately, and then to compare them with others. Thus, there may be in one a crooked comb, in another a faulty tail, in this a light leg, in that a spotted hackle. These faults, fatal if they are found in pens opposed to those that are free from them, become venial, and rank only in matter of degree when all the entries have them or some of them. Judges have then to arrange among themselves the exact importance of each defect. This is always an unthankful task. A pen of average merit free from glaring defect will always take precedence of one of superior merit, but having some prominent fault; and a comparison and weighing of defects will often explain decisions that seem difficult to understand from the absence of startling merit. An accidental injury—as the loss of a nail from the toe of a cock is not a disqualification—is always considered as such, and does not take away from the merit of the subject of it. [This will answer E. H. G.]

Defects that are plainly hereditary, deformities, and weakness, are all dangerous to success. The breaking of a feather, the loss of a toe or nail, may be accounted as little more important than dirt on the plumage.

MANAGEMENT OF PEA FOWLS.

WILL you give me some information respecting the best way of treating Pea Fowls which are necessarily kept partially in confinement? What food (ours do not appear to relish barley) and what treatment during the change of feathers? Our Peacock having lost his tail about the usual time, has not recovered it, and is a miserable spectacle, though otherwise in good plumage.—A SUBSCRIBER.

[Your Pea Fowls want a change of food. If they are much shut up, give them plenty of green meat—such as lettuce, cabbage leaves, &c.; feed principally on meal instead of whole corn, and while the birds are moulting add a little stimulant to their food in the shape of hempseed, two or three peppercorns; or, for a change, slake the meal with ale, or hot pot-liquor in which meat has been cooked. They want plenty of perches as high as possible from the ground while shut up.]

THE CANARY AND THE BRITISH FINCHES. (Continued from page 365, Vol. XXIV.)

9TH VARIETY.—THE HOOPED OR BOWED BELGIUM.



In contradistinction to the Erect Belgian is the Hooped or Bowed fancy. Those properties that would be considered as faulty in the former are in this variety esteemed beauties. Thus we hear fanciers extolling their crouching and bowed form, like an aged and decrepid man. Their ewe neck, their high and rounded shoulders amounting to a deformity, their rickety legs, and their tails shut up as in one feather, and tucked between their legs like a frightened cur—all these are accounted good qualities in this peculiar breed. I must confess it is no favourite of mine; nor am I altogether singular in this respect, and I have frequently heard the ladies at exhibitions of Canaries express their disgust at their strange forms.

It is not, however, possible for all to admire the same fancies, and far be it from me to sit in judgment on other men's hobbies; and it seems to me to be much more equitable to allow the fanciers of this variety to speak for themselves. As it would be imprudent to pass the bird by without notice, I shall, therefore, make no apology for quoting others.

The fancier, whom I quoted in my last chapter, says, "The next variety I have observed is the very crooked, or what is termed the Hooped Belgium, and which is held in this part (Sunderland) in the highest and most peculiar estimation.

"This bird, as imported here, is very round in the shoulder, with very little hollow or cavity; but has, if I may be allowed the expression, a well-finished and nicely-chiselled shoulder. This bird is long in the neck, small in the head, very round or crooked in the back, and the greatest feature noticed is the peculiar manner in which it can with ease lower its head, making the neck and shoulders have a camel-like and crooked appearance. They are not so fully chested, and with very little ruffle, and not quite so large, but very fine and sleek in body. I believe the beauty of this variety is upon the same principle as the Highland terriers—their beauty consists in their extreme ugliness."

A fancier, again writing from Sunderland, says, "The fanciers in Belgium tell us that this description of Canary was first introduced from Austria; the name by which it is known in Belgium is Post Fogle, or bird of position: I suppose from the fact that the posture of the bird is the great feature of attraction and esteem.

"There are several varieties of this bird in that country, but the peculiar features recognised by the most enthusiastic fanciers as qualities of distinction or excellence are the following, viz.:—

"First, Prominence of shoulders in excess, pointed or well chiselled on the top of pinions; hollow in the back, forming a cavity very much resembling a triangle immediately between the shoulders, and extending down the back and tapering off to the rump.

"Secondly, A finely-formed head, and long sleek neck, forward in a line almost parallel with his shoulders; the chest prominent, the waist small and sharply compressed below the breast bone; legs long and slender, and when the bird is in position ought to be almost perpendicular with the shoulders. The bird must fall off from the extreme of the shoulder in a rather sudden descent, inclining in some measure to semicircular, and ought to stand very similar, when in position, to a round-shouldered man, whom age is just bending downwards. The tail ought to be very fine and resembling a pipe-shank, and the more sleek the bird the more value it is. The length of this bird is not so material as position, averaging from five inches and a quarter to seven inches. The bird ought to be finely feathered, with the exception of the hearl upon the breast, and a slight frill upon the shoulders;" and our friend concludes by saying such as the "one just described will bring from thirty to three hundred francs each."

Mr. Barnsby, also a fancier of this variety, gives the following

* POINTS OF THE DERBY AND NOTTINGHAM HOOPED CANARIES.

- "1st. Small, flat head.
- "2nd. Good neck, long and slender.
- "3rd. High square shoulders, vulture-like.
- "4th. Good circle, back well filled.
- "5th. Neatness, closeness, and length of tail, inclining in a circle with the back.
- "6th. Neatness, thinness, and length of bird.
- "7th. Legs and thighs for length, and erectness of.
- "8th. Closeness of feather.
- "9th. Richness of colour.
- "10th. Best standard properties as a combined whole."

It now only remains for me to caution amateurs that there are a great number of intermediate Belgian birds which are, however, of little value. Fanciers always go to extremes; they do not admire indefinite properties. To be a good and valuable Belgian Canary it must be good of the kind, whether it is an Erect bird, a Roughed Belgian, or a Hooped Fancy.

I have noticed, with much regret, that most of the schedules of Canary Shows do not specify which variety they intend to patronise, and it is mostly left to the Judge, who, perhaps, knows little or nothing about the various breeds of Belgian Canaries. I think at least the variety should be specified, in common fairness to exhibitors; but far better would it be to give a class to each variety—namely, Erect, Rough, and Hooped Belgians. This would be much more satisfactory than dividing them into Jonque and Mealy, Pied and Marked, as was done at the late Crystal Palace Show, 1859; and where, I was sorry to see, that neither the most erect, nor the best roughed, nor yet the most hooped received the prizes or even commendations, which, however, fell to neat little birds of good colour, but no extreme properties.

I hope I have dealt fairly with this vexed matter, and that I have been sufficiently explicit as to enable my readers to define the various breeds of Belgian Canaries.—B. P. BRENT.

(To be continued.)

BRIDGNORTH EXHIBITION OF POULTRY.

FEW exhibitions have stood so highly in the estimation of the poultry world as those that for a series of years past have been held at Bridgnorth. They have invariably been well conducted, the premiums offered have been liberal, and though last, not least, the utmost possible care has been devoted by the acting Committee to the welfare and comfort of the specimens thus confided to their temporary care. Such a combination of circumstances naturally leads onward to continuous success, the confidence of our best breeders and exhibitors is enlisted, and every succeeding meeting outvies its predecessors. The advancement of the just-closed Exhibition, however, quite outstrips anything we had anticipated; and when it is called to mind, that in every probability, ere another season, the railway communication to Bridgnorth will be complete, both for goods traffic and also that of passengers, we do not feel a doubt but that it will become greatly enlarged as to the amount of entries, although we are at the same time somewhat sceptical whether any great advancement as to the quality of the poultry in future years can be

insured over most of the pens that were publicly exhibited last week. For many years past, taking a review of our local Poultry Meetings, we fail to call to mind a single instance in which a collection throughout was so good. There is scarcely a doubt, that a considerable portion of the emulation has been evoked by the offer of a silver cup for the best collection of poultry entered by any single competitor; the minimum of pens thus shown being six, the maximum, twelve pens, as laid down in the printed regulations. The plan pursued by the Committee is also a simple one, and has always worked most satisfactorily. "A first prize to count three points; a second prize two points; a high commendation one point; and a pen simply commended half a point. The cup thus to be disposed of this year was a most covetable-looking one, fit for any table in the kingdom, and also most modern in design. Five competitors strove their best for its future ownership, all these parties standing highly in poultry culture, and residing in widely diverse localities. The trial was no mean attainment; for, independently of the immediate rivals for the cup itself, a whole host of first-rate breeders competed also in the general classes for the money prizes—thus not unfrequently snatching away many premiums from those parties whose chief anxiety was to become the fortunate possessor of the plate. Even with this necessarily great drawback it will be seen the cup had to be hardly fought for, and the difficulty of winning it no slight one. The points finally determining the award will be interesting to our readers, and we therefore subjoin them:—

| | |
|--|-------------|
| Mr. J. B. Chune, Coalbrookdale | 25½ points. |
| Mr. G. Peters, Birmingham | 18 " |
| Mr. J. Dixon, Bradford | 17 " |
| Mr. J. Martin, Worcester | 15½ " |
| Mr. H. Carter, Upperthong | 10 " |
| Mr. W. Harvey, Sheffield | 9½ " |

Scarcely a single entry of any of these exhibitors was made that did not insure some remark or other in the prize list, and certainly no plate could be more enthusiastically coveted.

As regards the fowls themselves, as classes the Buff *Cochins* were magnificent. The most palmy days of these birds never contributed better. The White *Cochins* were likewise first-rate. The Grey *Dorkings* were far a-head of any such as have been before seen at Bridgnorth; whilst the whole of the *Game* classes, save the Whites or Blacks, were really unexceptionable. To win even a single prize amid such a competition is, indeed, a triumph. The *Hamburghs* were universally good throughout. It is remarkable that the Bridgnorth collection of these breeds stood much in advance of those recently shown in their native locality, Yorkshire. The *Polands*, *Brahmas*, and *Silky Fowls*, were perfect. The *Bantams* were barely so good as heretofore; and, most singularly, not a solitary Sebright was entered. The question naturally arises, What is to become of these beautiful varieties—the most beautiful of any, and invaluable for the rearing of Game in cases where, during harvest, the eggs of either Pheasants or Partridges are unexpectedly laid bare?

The White Aylesbury *Ducks* were such as only Mrs. Seamons, of Aylesbury, or Mr. Fowler, of the same locality, can boast. Their townsman, Mr. Weston, appears to have been broken down and is missing. Mrs. Seamons here had it "all her own way;" her three pens were worthy of any show, scarcely a shade of difference existing among them, though far a-head of all others. As being placed in the catalogue at a really moderate price, it appears probable they have paid their last visit to Aylesbury. Miss Steele Perkins, of Sutton Coldfield, forwarded two capital pens of Ducks, of extra varieties (the White Calls and Buenos Ayrean).

The early morning of exhibition was much dispiriting, the leaden clouds pouring forth a deluge of rain. By mid-day the aspect of things was, however, the very reverse—a fine, sunny sky enticing a goodly throng of visitors from many miles around; whilst the liveliness of the scene was greatly increased by the exertions of the brass band belonging to the Local Rifles.

Mr. Edward Hewitt, of Eden Cottage, Spark Brook, fulfilled the duties of Judge on this arduous occasion.

COCHIN-CHINA (any colour except white or black).—First and Second, Messrs. G. and A. Peters, Birmingham. Commended, E. Tudman, Whitechurch, Salop; G. Lamb, Compton, Wolverhampton; W. Harvey, Sheffield.

COCHIN-CHINA (White or Black).—First, Messrs. G. and A. Peters, Birmingham. Second, G. Lamb, Compton, Wolverhampton.

DORKINGS.—First and Second, J. B. Chune, Coalbrookdale. Highly Commended, E. Tudman, Whitechurch, Salop. Commended, C. H. Wakefield, Malvern Wells; W. T. Hill, New Inn House, Claverley; J. Martin, Claines, Worcester.

GAME (Black-breasted and other Reds).—First and Second, J. B. Chune, Coalbrookdale. Commended, J. Martin, Claines, Worcester; W. Cherrington, Allscot.

GAME (White and Piles).—First, J. Martin, Claines, Worcester. Second, J. B. Chune, Coalbrookdale.

GAME (Duckwings and other Greys and Blues).—First, J. B. Chune, Coalbrookdale. Second, Messrs. G. and A. Peters, Birmingham. Highly Commended, W. T. Hill, New Inn House, Claverley.

GAME (any other variety).—First prize withheld. Second, J. B. Chune. **GAME COCK.—**First, J. B. Chune, Coalbrookdale. Second, Messrs. G. and A. Peters, Birmingham. Highly Commended, J. Martin, Claines, Worcester; J. B. Chune, Coalbrookdale. Commended, W. Cherrington, Allscott.

HAMBURGH (Golden-pencilled).—First, W. Harvey, Sheffield. Second, J. Martin, Claines, Worcester. Highly Commended, J. Martin. Commended, J. B. Chune, Coalbrookdale; Messrs. G. and A. Peters,

HAMBURGH (Golden-spangled).—First and Second, H. Carter, Upperthong, near Holmfirth. Highly Commended, J. Dixon, Bradford; Messrs. G. and A. Peters, Birmingham. Commended, W. Harvey, Sheffield.

HAMBURGH (Silver-pencilled).—First, J. Dixon, Bradford. Second, W. Harvey, Sheffield. Highly Commended, J. Martin, Claines, Worcester. Commended, Countess of Dartmouth, Patshull Park; J. Martin.

HAMBURGH (Silver-spangled).—First, H. Carter, Upperthong. Second, J. B. Chune, Coalbrookdale. Commended, Countess of Dartmouth, Patshull Park; J. Dixon, Bradford.

POLANDS (Black with White Crests).—First prize withheld. Second, H. Carter, Upperthong.

POLANDS (Golden-spangled).—First, J. Dixon, Bradford. Second, Messrs. G. and A. Peters, Birmingham.

POLANDS (Silver-spangled).—First and Second, J. Dixon, Bradford. Commended, Messrs. G. and A. Peters, Birmingham.

SPANISH.—First, J. Martin, Claines, Worcester. Second, J. B. Chune, Coalbrookdale. Commended, T. Boucher, Birchfield, Birmingham; J. Dixon, Bradford; G. Lamb, Compton, Wolverhampton.

ANY OTHER VARIETY.—First, W. Harvey, Sheffield (Brahmas). Second, J. Martin (Silkies). Highly Commended, J. Dixon, Bradford (Brahmas).

BANTAMS.—First, J. Dixon, Bradford. Second, Messrs. G. and A. Peters, Birmingham. Commended, W. Harvey, Sheffield.

DUCKS (White Aylesbury).—First and Second, Mrs. Seamons, Hartwell, Aylesbury. Highly Commended, Mrs. Seamons.

DUCKS (any other variety).—First and Second, Miss Steele Perkins, Sutton Coldfield, Birmingham. Commended, W. H. Kerr, Worcester.

MR. TATE, OF DRIFFIELD.

I SEE you have published my name in a scandalous manner. I wish to know who authorised you to do so, as the statements are untrue and calculated to do me a great deal of harm. Some people are always ready to believe such things. As for Mrs. Cross, I did not think it worth replying to her; but Baxter will hear of it again.

I will submit to your own opinion the facts. In July, Baxter wrote to know the price of a pen, cock and two pullets, of Malays, three months old. I told him 30s. was the price, and on receipt of a post-office order they would be sent. He sent the order and I sent the birds—a cock and two pullets, then four months old, which I will prove to any one, and that they were two pullets and only one cock, and not, as he says, two cocks and one pullet. They were small, but every one knows what chickens are this cold, wet spring, and the cock was a little less than the pullets, being three weeks younger; but they were all first-class birds, and from prize birds, too, which have taken seven first prizes and five seconds this year; and they took first at York last Christmas Fat Stock and Poultry Show, then only very young, and they are from the purest and best breed in England, those he calls half bred; besides, when he returned them I sent him another pen of very good birds, worth three guineas, those he kept five or six weeks, never said a word about them, and then wrote saving I was to send his money, and he would return the birds. Was it likely after keeping them all that time? Would you do it? And as for the hamper which he calls filthy, I paid 3s. for it myself, with a pen of birds in it sent from a lady, yet I did not object to it, and why should he? Had he returned the birds at once, I should have paid carriage and returned his money. Judge betwixt us both.—R. TATE.

[There can be no doubt about this transaction. Mr. Baxter wanted chickens, and Mr. Tate sent old birds. No man has a right to send goods differing from those ordered from him. Mr. Tate did the same to "E. C.," and it is quite indefensible. We have now laid the facts before our readers, and shall not insert any more communications upon the subject. Mr. Baxter signed his name to the statement we published, and Mr. Tate must correspond with him on the subject.—EDS. C. G.]

DORKING COCK BROODY.

PERHAPS it may be interesting to the readers of THE COTTAGE GARDENER to know the following:—On the 21st of June last a Dorking hen hatched me seven Sebright Bantam chickens. She with them were kept in the garden separate from all the other fowls. The end of July she began to lay again in her coop, and the second week in August beat her chickens off, so that I was

obliged to separate them on the 20th. Since which time a three-year-old Dorking cock has taken them under his care, finding food and calling them during the day, and at night brooding them in a shed on the ground, where neither he nor they were accustomed to go. Before the 20th of August he never saw them.—E.

SECOND SWARMS.

BELIEVING myself to be in a position to throw some light on the question raised by "H. T." in the last COTTAGE GARDENER, I may, perhaps, be permitted to state, that in the course of my experiments in raising queen bees by artificial means during the past summer, I have found that they quit their cells in a very immature condition, being quite as incapable of flight as the newly-hatched workers or drones. Whether they are able to take wing prior to the expiration of five days, I am unable to say; but this is the time that usually elapses before their first excursion. Naturally-raised queens are, probably, often confined to their cells in the manner described by Huber, and may, therefore, be capable of flight as soon as they issue from them; although I should not think such would be the case where a second swarm had been so long delayed as the one in question.

The following instance proves that queen bees are sometimes more than sixteen days in arriving at maturity—a delay which may, probably, be fairly attributed to an ungenial temperature.

Being desirous of raising queens during the absence of my Ligurian bees on the heath (a distance of eight miles), I brought home some pieces of comb containing eggs, on the 27th August. Only one queen was the result of this experiment, and she did not issue from her cell till the 14th September—a period of eighteen days. As it is not probable that the egg from which she proceeded was laid the same morning that I removed it, whilst it possibly might have been three or four days old, we may assume eighteen to twenty days as being required to perfect a queen bee in an unfavourable season. If to this we add the time which must elapse (whether confined to her cell, or at large in the hive), before the young princess is able to take wing, it will fully account for an exceptional period of eighteen or even twenty days between a prime and second swarm.—A DEVONSHIRE BEE-KEEPER.

OUR LETTER BOX.

OLD HENS (Victoria).—Hens four years old, whether Cochins-China or any other variety, will not lay well in winter. There is no help for you but to get rid of them. We pointed out the modes some weeks since. The Cochins-China pullets you have will begin laying by the end of the month.

SPANISH CHICKENS AT CRYSTAL PALACE.—Mr. J. R. Rodbard writes to say that the Judges must have made a mistake in assigning a "commendation" to him; for although he entered two pens for exhibition at the Crystal Palace, he did not send any.

BELGIAN CANARIES (H. P. I.).—We cannot state the names of any breeders of Belgian Canaries. The Crystal Palace Bird Show has been hitherto held in November. Its list of exhibitors will furnish you with the information you ask for.

DISTINGUISHING A CANARY'S SEX (Thomson).—Some fanciers think they can tell the sex of Canaries by their shape and carriage. The cock, they say, has a larger head, and is of a deeper yellow about the forehead and cheeks, and that his carriage is bolder and more erect. Singing is the best criterion, and your bird that is a year old and has not song is most likely a hen.—B. P. BRENT.

RABBITS (Jemima Wilhelmina).—Chinchilla Rabbits are hardy, prolific, and very good on table. They vary in price, but we should think you would get a pair at from 20s. to 26s. A common doe Rabbit will bring you forty young Rabbits in the course of the year, sometimes many more; but then the doe is quickly worn out. The average weight of common Rabbits is from five to seven pounds; some of them get as far as nine, and by feeding they may be made heavier still. Tea leaves are sometimes given, but we have not found very great results from their use. Rabbits should be fed as soon after daybreak as possible, at mid-day, and again at night; they will, however, do very well without the mid-day meal if the other two are substantial. Does while suckling require feeding often.

LONDON MARKETS.—OCTOBER 1.

POULTRY.

There is still but a very moderate supply of poultry at market. Geese were deficient both in numbers and quality, corn being evidently used most sparingly in fattening them. It is not as important as it would have been formerly, as the observance of Michaelmas is gradually dying away.

| | Each—s. d. | s. d. | | Each—s. d. | s. d. |
|--------------------|------------|--------|---|-------------------|------------|
| Large Fowls..... | 4 | 0 to 4 | 6 | Turkeys..... | 0 0 to 0 0 |
| Smaller Fowls..... | 3 | 0 ,, 3 | 6 | Guinea Fowls..... | 0 0 ,, 0 0 |
| Chickens..... | 2 | 6 ,, 2 | 9 | Pigeons..... | 0 7 ,, 0 8 |
| Geese..... | 6 | 0 ,, 9 | 0 | Grouse..... | 3 0 ,, 3 0 |
| Goslings..... | 0 | 0 ,, 0 | 0 | Partridges..... | 2 3 ,, 2 6 |
| Ducks..... | 2 | 6 ,, 3 | 0 | Rabbits..... | 1 4 ,, 1 5 |
| Ducklings..... | 0 | 0 ,, 0 | 0 | Wild ditto..... | 0 8 ,, 0 9 |

WEEKLY CALENDAR.

| Day of M'nth | Day of Week. | OCTOBER 9—15, 1860. | WEATHER NEAR LONDON IN 1859. | | | | Sun Rises. | Sun Sets. | Moon Rises and Sets | Moon's Age. | Clock after Sun | Day of Year. |
|--------------|--------------|--------------------------------|------------------------------|--------------------|-------|-----------------|------------------|------------------|---------------------|-------------|-----------------|--------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | |
| 9 | Tu | <i>Centaurea solstitialis.</i> | 29.854—29.603 | deg. deg. 64—50 | E. | ·21 | m. h. 16 af 6 | m. h. 18 af 5 | m. h. morn. | 24 | m. s. 12 48 | 283 |
| 10 | W | <i>Calendula arvensis.</i> | 29.609—29.491 | 58—50 | E. | ·04 | 18 6 | 16 5 | 25 0 | 25 | 13 4 | 284 |
| 11 | Th | <i>Callitriche autumnalis.</i> | 29.543—29.422 | 60—42 | N.W. | ·05 | 20 6 | 14 5 | 52 1 | 26 | 13 19 | 285 |
| 12 | F | <i>Angelica archangelica.</i> | 29.657—29.656 | 63—46 | S.E. | ·10 | 21 6 | 12 5 | 19 3 | 27 | 13 34 | 286 |
| 13 | S | <i>Polygonum terrestre.</i> | 29.743—29.616 | 59—44 | S.E. | ·01 | 23 6 | 10 5 | 47 4 | 28 | 13 48 | 287 |
| 14 | SUN | 19 SUNDAY AFTER TRINITY. | 29.502—29.470 | 60—47 | E. | — | 25 6 | 7 5 | sets. | ● | 14 2 | 288 |
| 15 | M | <i>Polygonum minus.</i> | 29.510—29.427 | 63—50 | E. | ·14 | 26 6 | 5 5 | 54 a 4 | 1 | 14 15 | 289 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 60° and 42.2° respectively. The greatest heat, 76°, occurred on the 14th, in 1845; and the lowest cold, 24°, on the 15th, in 1850. During the period 115 days were fine, and on 116 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

Asparagus, when the tops are decayed cut them off close to the ground; the buds to be made clean, and then covered three inches deep with rotten dung or leaves; the alleys to remain as they are, for if dug out many of the roots are thereby injured. *Broccoli*, if growing very luxuriantly it is advisable to thrust the spade into the ground at some distance around the stem, to cut some of the roots without disturbing the soil, which will have the effect of checking their luxuriant growth, and they will then be less liable to suffer from frosts. *Cabbage*, the main spring crops to be planted out, if not already done, as soon as possible. All that were planted in August for Coleworts to be earthed up. *Carrots*, if the tops are decaying, take them up, and store them in sand. *Endive*, continue to blanch as wanted for use. *Lettuce*, continue to plant the Cabbage sorts into frames for winter use. The Cos varieties for spring use to be planted at the foot of a wall or fence, or on a sheltered border, as soon as they are of sufficient size. *Onions*, look over the store, and remove any that are decaying. *Parsley*, take up, if not already done, strong plants, to be potted and protected for a reserve in severe weather. *Sea-kale*, as soon as the leaves begin to decay, clear them away; it is advisable to do it as soon as possible where it is required for early forcing. Every piece of ground which has now become vacant to have the requisite quantity of manure laid on, and the operation of deep trenching to be carried on at every favourable opportunity.

FLOWER GARDEN.

Proceed with the taking up and potting such plants as it is desirable to keep as soon as possible; and where it is at command, give them a gentle bottom heat, to help them to root before winter. Lose no time in planting off-set Tulips, and any of the old bulbs that do not appear in a healthy state. Give Carnation layers in frames plenty of air; and if any were not sufficiently rooted to have been removed early in the season, they should now be taken up, and planted out or in pots, as may be desired. Cut in the straggling branches of Pansies, to concentrate their strength the better to withstand the severity of winter. Examine Pinks, and fasten them if disturbed by winds or worms. All operations connected with planting, relaying turf, and border making should be speedily proceeded with.

FRUIT GARDEN.

Continue to collect and to store away carefully the late varieties of Pears and Apples. Walnuts which have been gathered and sweated to be placed in earthen pans that are quite dry and not glazed, to be covered with a piece of canvass or thick brown paper, and about one inch of dry sand over it, to be stored away in a moderately dry place until ten days or a fortnight before the pan is opened for use, when they should be placed in a damper situation to freshen them, and to cause the inner skin to peel off more easily. If wet weather continues, protect the Strawberry plants in pots by laying the pots on their

sides, or by placing them in frames. See that worms are excluded. Fill up all vacancies on the walls with young trees: such work should never be postponed to the spring if it could possibly be avoided. Where root-pruning is considered necessary, now is the time to perform it. Also, the lifting and transplanting of very vigorous trees on the walls gives a check to the whole system that is productive of fruit.

STOVE.

Continue a kindly course of treatment with the *Euphorbias*, *Gesneras*, and other plants for winter blooming. A temperature of from 65° to 70° by day and 60° by night will suffice, with a free circulation of air, and a rather moist atmosphere in the afternoon.

GREENHOUSE AND CONSERVATORY.

Whatever watering is necessary, to be given early in the day, to allow the superfluous moisture to be dried up before night, as there is more danger to be apprehended from damp at this season than from a rather low temperature. However, in cold cloudy days it is advisable to use a little fire heat with air during the day to secure a moderately-dry state of the atmosphere before night. The fire heat to be used very sparingly, and only when it is necessary to prevent injury from damp, or the temperature from falling below 40°. Look the *Camellias* over, and thin out the flower-buds where necessary, allowing not more than two buds to each shoot, retaining the largest and smallest, to get a succession of bloom. The leaves, if necessary, to be washed clean, and of the Orange trees the same. All plants for forcing purposes to be placed under cover, if possible, either in cold pits or by making some temporary protection for them. Roses and Lilacs to be pruned and regulated. *Rhododendrons*, *Azaleas*, and other American plants to be potted without delay. All the pots to be plunged in tan, or any other light material. Provide a store of the various kinds of soil for potting purposes; to be secured under cover.

PITS AND FRAMES.

The rooted stock of *Verbenas* to be kept clear of green fly, and to be exposed freely to the air at every favourable opportunity, to prevent growth, and to keep the plants hardy. Late-struck cuttings of *Pelargoniums* and other such plants that are not well established in their pots to be treated more kindly by placing them on a gentle bottom heat to encourage their roots, but avoiding a close and moist atmosphere that would excite them into growth, and would do them more harm than good.

W. KEANE.

TROPEOLUMS AND GAZANIAS.

FIVE years back an experiment was tried on the then *Tropeolum Brilliant*, a fine, late-autumn bloomer; the motive was to get it to bloom all through the winter in a conservatory that opens into a drawing-room. Two forms of the experiment are on record in a private garden

memorandum-book: the first form was a successful attempt at potting a plant fifteen feet long from the open ground, which was effected in August by first cutting one-half of the roots in the border to within six inches of the stem of the plant; then putting two handfuls of leaf mould under them and around them, and closing it in with the common soil, which was then pressed down firm after a slight watering. In twelve days the cut roots made a mass of new fibres in the leaf mould, and then the other half of the roots was similarly treated. The plant was then watered daily, or once in every two days, till the rootlets from the second-cut half of the roots occupied the leaf mould. The mass was then got carefully into a large pot with some good loam. The top of that plant was in training all that time, and, with a few of the bottom leaves gone, suffered no other change.

Two strong layers from another large plant of the same Brilliant were made at the same time in August—a fine, late autumn followed—and these were not taken in-doors till late in November. The Dahlias and Chrysanthemums were in bloom together at the time in the London squares. These plants bloomed in the conservatory till March, but so sparingly as not to warrant a repetition of the process.

Some members of the establishment (the Experimental) say—for the trial was made there—some of the experimentalists maintain to this day that the plants were out too long by six weeks; or that they ought to have been into the conservatory before the 10th of October to give them a fair chance of proving the value of the practice for getting winter flowers on an easy scale. Others of the witnesses assert that Brilliant was at fault as a winter bloomer; that, although it was then the best breed from Lobbianum, it did not inherit so much of its merit as a winter bloomer as would pay the expense of rearing it on purpose in competition with Lobbianum itself; which, when done properly, is the very best winter-blooming plant of all the climbers, and the one which pays the best for cut flowers for Covent Garden, or any other flower mart in the three kingdoms.

Six weeks back I called on Mr. Kinghorn at his nursery, West Sheen, near Richmond—a private business visit, but there I saw a case in point. They were unravelling a huge monster specimen of *Tropæolum Lobbianum*, as I understood them to say. It was in a large pot, and it was then remodelled, to be set off again for blooming this autumn and next winter. Mr. Kinghorn told me then that cut flowers in winter paid better in Richmond than any branch of his business; and I think, in reference to the big plant the men were training, that Mr. Kinghorn told me then Lobbianum was still the best of them all for winter blooming.

Now there is a question of some marketable value in these *Tropæolums*, and one of great private interest, which “G. D.,” of Hammersmith, just touched upon in the last number of *THE COTTAGE GARDENER*, page 7. But, in the first place, it is of great practical value to hear and know how new plants for any purpose succeed under different circumstances, and particularly that *Tropæolum Stamfordianum* does not do on some soils and under ordinary training so well as elegans. You recollect our accounts of it were from Wrotham Park, Shrubland Park, Archerfield, and Dalkeith Palace—four places at which they take four times more pains to grow new plants on the right model than they do in more ordinary places. Our information now amounts to the fact, that *Stamfordianum* requires in a wet season to be in light, dry soil, and under the highest style of management to make it at all equal to elegans. But my own elegans is just a wonderful botheration to me; it is nine feet high and ten feet through;—seeds like a “varmint,” and never ceased the whole season to give me a weekly crop of yellow leaves; and yet it is such a love of a thing that one hardly grudges it all the care to make it tidy. But if this dear elegans of mine were out this season for the

first time I should never recommend it for a general favourite, not knowing its capabilities: therefore, the more we hear of, for or against, a new plant, the sooner we shall be able to fix it at its proper value.

Again. The first Punch which came to London—I mean the *Geranium Punch*—was to Broom House, at Fulham, the honourable proprietor and all his family being previously aware of its merits on its native soil; but Punch was a dead failure at Fulham, and at Brompton too, with the late Mr. Conway, to whom the second lot to London was sent. But Punch is now well known to be the best plain-leaved Scarlet *Geranium* after the *Crystal Palace Scarlet*, which is three years older than Punch. Therefore, kinds like Punch and *Stamfordianum*, which appear to be peculiarly affected by soil and situation, should be experimented upon in all large places before they are admitted into the great family of bedders.

The second toucher is about the flowering of *Elegans*, *Stamfordianum*, *Triomphe de Hyris*, and “*Triomphe de Univers*,” a long-legged, starved-looking thing, which was florally committed last month to oblivion, and these were incidentally mentioned as blooming through the winter by “G. D.,” Hammersmith; and the question is, What is the best way to prepare the plants to bloom all the winter in-doors, and is that a cheaper way than the manner of doing Lobbianum for the same purpose? And as there is no practical difference between the cut flowers of Lobbianum and any of these kinds of crosses, it may be of great use to know the kinds which can be brought to market the cheapest. As for private conservatories, and for filling flower-glasses from the home growth of the place, there is no end to the ways and means. Some will go the shortest and cheapest way to work, like the salesmen; some will go round and round the bush, or take the longest route and the greatest number of kinds which his eager hands can lay hold on; and some will steer only to the points between the extreme limits.

Now, has any person kept *Tropæolum elegans*, or any other variety of the breed of Lobbianum in flower during the past winter? or has the idea of doing so occurred just now? I have a case before me, in which I believe it possible to keep elegans in bloom the best part of the winter, and I mean to follow out the inquiry. It is this: Last spring, and once on a former occasion, we had found at the Experimental that the autumn cuttings of elegans kept badly through the winter, and were very shaky in the spring to get early cuttings from. We then, or last April, resolved to change the practice of taking cuttings of it in the autumn, and resort to the old expedient of keeping store plants of it from the late spring propagation in pots through the summer; and now we have nice little bushy plants of it in No. 48-pots, which will furnish a supply of early cuttings safe enough in the spring. That practice I would strongly recommend to those who have met with the same difficulty as we found; indeed, to all those with moderate means for keeping plants as they ought through a long winter. Early last September, when Mr. Kinghorn told me that Lobbianum was the best of the race for blooming all the winter, it occurred to me that our little plants of elegans might very easily be brought into competition with Lobbianum for the same purpose, and I potted one of them then for the trial into a 32-sized pot and rich compost. That plant is still out of doors, but it has made a start to grow, and has nine or ten blossoms on now, and a healthy set of leaves; and if I had one hundred such plants I think nothing could be more easy than to keep them in growth and bloom till next February, and that in a very small space indeed as compared with the large extent of surface room which would be necessary to obtain the same quantity of bloom from so many, or any number, of the true Lobbianum.

To finish and clear up the season with these *Tropæolums*, you will see one called Garibaldi in the first advertisement of the last number of *THE COTTAGE GARDENER*,

it is from the Messrs. Garaway & Co., of Bristol, and is of the *Lobbianum* breed, with the habit of *elegans*. It seems a cross with some dark purple common *Nasturtium*, with the flowers not much larger than those of *elegans*, and the habit, leaf, and looks entirely of that race, and in the opinion of seventeen practical good judges was unanimously voted worthy of a prize, and very likely to answer any purpose to which *elegans* might be put.

Well, to clear up as we go, you have seen from the cold eastern counties, at page 4, that Mr. Shortt, at Raby Castle, reports *Gazania splendens* makes "one of the best beds in the garden" there. It was also the best bed in the Chiswick Experimental grounds this season; and yet we have had doubts about it being a *splendens* at all, and nothing but the old *rigens*, from young suckers or offsets down at Luton. And of all modes of watering, I dislike that the most which pours cold water on young seedlings, suckers, offsets, or ideas. I would nourish them and cherish them, and give them the room of specimens of the old stock. But a suggestion which was made to me in reference to that doubt by one of the Floral Committee when we were admiring the bed at Chiswick made a deep impression on me. It was to this effect, that our young rivals may have never yet seen *rigens* at all; that they had been growing *splendens* all these years instead of *rigens*; and when *splendens* came out the second time, and at the right time to be fully appreciated, they could see no difference between it and what they had for *rigens*. Ask "what is in a name" now, and you might be told just a thousand-pound Bank of England note, for that was the value of that *splendens* *alias* *rigens*, three years back!—enough to make a fellow throw up the cards at once. Only think of that sum coming in one lump, a wife on the strength of it, and a fresh lease of life in the front drawing-room to the bargain, and if that is not like *rigens* there is nought of the *splendens* about the thought.

The best and most practical advice we can now give in applying the above to individual comfort is this: Secure some of the longest-running plants of *Gazania splendens* before they are much frosted, make choice of one of the longest shoots on each plant and call it a leader, then cut in the rest of the shoots to one joint from the leader, stick them to keep them upright in the pots, or do not put sticks to any of them, but let them hang down from a shelf at the coldest end of your means; and next May you will say you never saw such useful things to put high on rock-work, to hang down from rootwork or rustic vases, and other odd ways of doing them. Also, till the frost gets too hard for them, look them over in the beds of an afternoon of sunny days, and every flower that is open pick it off, take it in-doors, put it in damp sand, and it will keep open ever so long, and may be for days and weeks after the frost has done for them out of doors. The same plan adopt with *Tropæolum elegans*, *Stamfordianum*, and all that breed. Get handfuls of their open and half-open blooms, and some in forward bloom-buds, take as much stalk to each flower as you can gather, do it in the afternoon when things are driest in October and when frost is expected. No great matter if the gathering-in of flowers from the frost is done ten times over, provided it is done the very night before the frost. Scarlet Geraniums are the next best, and Dahlias are best of all; if they are taken quite dry at sunset the night the frost comes, some of the half-blown blooms will be fresh and good for decoration, or ought to be, just three weeks after the fall of all the emperors. I have been at such work by moonlight many a time, and I have known a whole display of cut flowers in the drawing-rooms a fortnight to three weeks after the plants which produced them were dead and gone with the frost.

D. BEATON.

P.S. The purple Orach from Trentham is sown broadcast the first week in October; another sowing at the end of February, and another early in May will follow, thanks to Mr. Henderson.

HARDY POTTED EVERGREENS FOR THE FRONT OF A TOWN HOUSE

I LIVE in the principal street in a town. I have no flower garden. The first story of the house projects about three feet on this I want to put plants to give it as gay an appearance as possible. Please give me a list of plants suitable for winter and the rest of the year.—A NEW SUBSCRIBER.

[*Aucuba*, *Laurustinus*, *Box*, *Arbutus*, and two or three *Cypresses*, and *Jasminum nudiflorum*, would, we presume, suit you best in winter, to be followed by bulbs, assisted inside the windows. We can give you no list, as we do not know anything of the length of the place, nor your conveniences; but we are sure we shall be doing you a favour in recommending you to order from our office "Window Gardening for the Many," and if after reading that there is anything in which we can be of service, we shall be pleased to assist you. Such a place, similar to a large balcony, ought to be a source of much pleasure. Tell us, if you write again, where you reside.]

KEEPING VARIEGATED BEDDING GERANIUMS THROUGH THE WINTER.

"A TWO-YEARS SUBSCRIBER" would feel much obliged by being informed if variegated Geraniums should have their leaves stripped off after being taken up from the beds before being put away for the winter; and how Scarlet Geraniums should be treated after they are taken up. The only means of keeping either through the winter being a Mignonette-box just free from frost.

[It is a matter of no consequence, for unless you treat your plants well and can give them plenty of room, the leaves will be sure to drop. Our own practice with variegated Geraniums is to nip off the soft points, and all the leaves larger than a sixpence, and pack the plants thickly in a box, similar, we presume, to your Mignonette-box, in soil neither wet nor dry, and giving but very little water to settle the soil about the roots; and whilst we give these air, we also like to give them as much heat as possible before starting into growth. We daub the cut ends of the shoots with a powder consisting of lime and charcoal dust. When we can give each plant of a valued kind a little pot and the slightest artificial heat after potting, we remove all the larger leaves, but we leave the points alone to furnish us with cuttings in spring. But without the extra heat and care it is of little use leaving the soft, spongy parts of your shoots; for after such a season as this, the soft, succulent part will, most likely, rot and decay in winter. For instance: if your plants are a foot in height, remove all the large leaves, and shorten them by at least a fourth, if you mean packing them in a box. We have succeeded as well when we shortened them at once more than one-half—the plants were more compact the following year. If you pot separately and leave the shoots uncurtailed, and give them no heat, be careful you do not over water, and rather in dry, sunny weather, give the stems a slight syringing.

Scarlet Geraniums just require less trouble and care. Very sandy loam and a very little leaf mould, rather dry than wet, are good for packing them in.

In one word, disleafed and cut-back plants may be kept as stools that will break in spring, and stand rough treatment in winter. Plants with shoots left all their length require as much care as young plants raised from cuttings.]

TREATMENT OF BULBS THAT HAVE DONE FLOWERING.

I have some choice *Gladioli*, *Lilium lancifolium*, and *Arum Lilies* (*Richardia æthiopica*), all in pots, and as they have now done flowering, I want to know how to treat them. My gardener tells me to plunge the pots a foot deep in the ground, but this appears to me to be rather a rude way of dealing with them.—J. W. S.

[All bulbs which cast their leaves and rest after a season's growth, whether out in the borders, or under glass, begin first to turn yellow in the leaves; from that moment of turning yellow give no more water to pot bulbs, not even so much as one drop: the effect of that will be that the remaining green in the leaves will suck up any extra and unripe remaining sap in the bulbs, and that will cause the bulbs to keep better in the dry state, and also make them less liable to any harm or infection during the

next growth. And as to what to do with bulbs when they are at rest, why do just as you would do with your own children—do not disturb them till they awake naturally, and see the sleeping apartments are neither more cold nor less hot than is natural to them when they are up and doing. Above all, see they are not in damp sheets. Very small bulbs must be treated like "Our baby." If they happen to go asleep in very large pots, they are like babies slumbering on their mother's bed, and both must be very gently removed to little cots, or something like them—that is, to small pots. Again: "Choice Gladioli" to be done exactly as first-rate early Potatoes in every particular, save cutting for "seed." Keep the same, sprout them the same, increase them the same, plant them the same, take them up the same, and store them the same. The lancifolium Lilies to be kept in the same pots and stored like Potatoes till the end of February, from then to damp the mould and keep it from drying; and when the shoots are six inches long, if the pots are not big enough, give them a shift; and when you want to divide them, let that be done in November, and let each size of bulb be put in the different sized pots at once, and let the soil not be quite dry the whole winter. Calla, or *Richardia aethiopica*, treat exactly like the lancifoliums, only that March is the best time to shake them out from the balls when one wants to increase them. Your gardener's plan is still the same in principle as ours; he would pit them like York Regents, that is all.]

GARDENING AMONG SMOKE.

DURING the latter portion of 1859 I erected a greenhouse sixteen feet by six feet; height at front six feet; at back nine feet. I have four shelves for plants. For ventilation I have two side lights, and one at the end, upon swivels, but no moveable top light. The front of the structure faces to south-west. I am situated in the very centre of a dense manufacturing town in Lancashire, where the tall chimnies daily belch forth thick smoke and soot on every side of my tiny glass-house, which stands on rather elevated ground. When I tell you my position, you will, I am sure, pity me. On the west I am annoyed by smoke from a publican's brewhouse at least three times a-week. On the north by that from a dyehouse every day in the week; and on the east (or back) I am nearly smothered by filth from an iron foundry: all which compel me to drench my plants very frequently to keep them clean.

Of plants I have *Fuchsias, *Geraniums, an *Erica, *Hoya carnosa*, *Habrothamnus*, *Cacti, Azaleas, *Camellias, *Veronica, *Petunias, and some other minor plants. But I have been much disappointed with the Fuchsias and Geraniums. The former put forth their flower-buds; but when about half grown most of them dropped off. What is the cause of this?

My Geraniums grew vigorously, but the blooms, although good, were exceedingly small. They were carefully potted in a mixture of loam, a little decayed manure, and sharp sand, and carefully watered previously to and during the blooming period. How do you account for my non-success?

I have now several vigorous plants of different sorts of Chrysanthemums standing in a somewhat closely-confined yard, where they do not get much sun. Would you recommend me to house them now?—ONE OF YOUR READERS.

[We should be more than glad to help you out of your difficulties, but fear we can be of little service to you, unless in directing your attention to one or two minutiae. We believe the circumstances, as respects your most unenviable position, are the chief causes of your disappointment; though want of sun and a neglect of watering, or too much of it in such dull weather, might also contribute in making the blooms of the Fuchsias to drop. The same impure air might be the chief reason why the flowers of the Geraniums were so small; but as they grew vigorously we would just suggest whether growing in large pots, rich compost, and potting so late, that the flower-buds were beginning to open before the pots were filled with roots, might not also have something to do with it. Fuchsias will also suffer when flowering from a deficiency of air, and we have just thought that you would be better from having an opening for air at each end, and thus require to open the door only when necessary. Now, the great secret of success in your case, we take to be ability to give your plants plenty of pure air without letting in the smoke. For this purpose we not only approve of having your roof fixed, but we would as much as possible make it air-

* Those I have marked thus (*) bloomed,

proof, by close glazing, and allow no air to come in except at the regular ventilators; and over, or inside these ventilators we would either have fine wire screens, or good book muslin, that would let in air and keep out soot. These would get so soon dirty, that you would require to have two sets, as after they were well blacked the air would not get well through them. In hot weather, if you do not shade, you might want more openings for air, but with such openings thus guarded, you may pretty well defy all the chimnies, except in so far as you may have to wash the glass oftener. By using muslin or anything of that kind you would have to slide your ventilators, or open them on a hinge; but that can be easily done. We shall be glad to hear of the result of the trial. Your syringe will also be useful in the growing season, and so will the sponge. In the summer, if the chimnies cease smoking at night, you could give extra air then, and the plants would need less during the day. We have also had our troubles with smoke in our time.]

COFFEE AND CHICORY.

To ascertain if coffee contains chicory, fill a glass with water; when it is full throw some of the coffee supposed to be mixed on the surface of the water. If the coffee is not mixed, it rests on the surface; if on the contrary it is mixed, the chicory absorbs the water, immediately falls to the bottom of the glass, and colours the water brown. It will be observed that this proceeding is founded on the different textures of the two products, which absorb water in different periods of time. If the powder which falls to the bottom of the glass is examined, it will be seen that it has not the consistence of coffee, and that it is soft, which is not the case with the coffee, which should remain on the water.—(*La Maison à Campagne*.)

GROWING CUCUMBERS IN A GREENHOUSE.

I HAVE a greenhouse heated by an ordinary brick flue. I want to try and contrive out of it a bed to grow Cucumbers, &c., in the winter; and my idea is this:—to put up boards adjoining the flue the whole length of one side, enclosing a space two feet wide, and to the height of eighteen or twenty inches; covering the top of the flue and bottom of the enclosed space with cinders and crocks, &c.; to put the soil on top of this, sloping inwards slightly from the glass. I want to know to what extent I ought to cover the flue before putting on the soil, and what depth of soil would be sufficient, also what bottom heat I should have to maintain. Would there be any objection to forcing Strawberries in the same house and with the same means? and when ought I to begin forcing them? You will see by the plan that the bed would be about fifteen feet long by three feet six inches broad, including the width of the flue; and that there are just twenty inches between the top of the flue and the bottom of the front lights.—D. B. B.

[What would be more important under the circumstances for us to know would be the height of these front lights before they joined the roof lights, as showing at once the head room for the Cucumbers. The end section of the roof, and whether the house is span or lean-to, and especially if the end opposite the doorway be of glass, would also be important; as, if that end were glass, the Cucumbers would have the best chance of heat there, being nearest the fireplace. Your enclosed space is proposed to be on the side, and consequently beyond the hottest end of the flue. Now, whether such a house can be made to grow Cucumbers will depend on the strength and width of the flue. Heated by one fireplace and one flue, it will be impossible to grow in it Cucumbers and the usual greenhouse plants. This could only be done by dividing the house by a glass or other partition, and returning the flue in the hot division, and having openings there to let out the heat into the greenhouse when desired in frosty weather. To commence Cucumbers and Strawberries in such a house simultaneously would also require such a division; for, though Strawberries when set would swell in the coldest part of a Cucumber-house, the placing plants there at once would lead the most of them to come blind, and either not show their blossom or not to set it. If by the mode proposed you can keep up a temperature in the soil of from 70° to 80°, and in the house of from 60° to 67° in dull weather, with a rise of 10° or more from sunshine, you may turn all the house into a Cucumber-house; the enclosed space over the flue being chiefly for bottom heat, and the other part of the flue being chiefly for top heat. If that is not your

object, but you wish to grow other things that require less heat, then your wooden division must be carried by glass or otherwise right up to the roof, and the Cucumbers during winter must be confined to that division or bed. According to the plan proposed, there should be three or four inches over the top of the flue of rubble, and at least from twelve to fifteen inches of soil over that; but, unless deemed desirable, the wood division would be as well if it were six or nine inches nearer the flue—the bed then would be quite wide enough. In fact, supposing that Strawberries were forwarded elsewhere, and were brought to the house to finish them, and the whole of it was to be devoted to Cucumbers and Beans and things requiring heat, we would just as soon dispense with wood divisions, clinkers, and crocks, and grow our Cucumbers in pots or boxes—say the latter eighteen inches long, and fifteen inches wide, and fourteen inches deep; and set them along the top of the flue, and merely separated from it by a couple of bricks to rest upon and keep the strong heat from them. In thus growing Cucumbers by flue heat, the flue must be sound and strong and the fuel good, or you may have an explosion that will soon injure the Cucumbers. If you have plenty of head room over the flue the bed would yield the most regular heat. We fear we do not quite meet your case; but if not, give us more particulars and we will try again.]

DANGER OF SULPHUR FUMIGATION BY MIXING IT WITH LIME.

My orchard-house, 20 feet by 14 feet, built of wood and glass roofed, painted white inside and out, was lately beginning to be infested with red spider, from which it had been quite free during the summer, all which time it was syringed pretty regularly; but I have discontinued it for a few weeks, and not liking to recommence it so late in the season, I determined to apply lime and sulphur.

I therefore procured fresh lime which I divided into three eight-inch pots, half filled, which when I had sprinkled with water I scattered half a pound of flowers of sulphur, and shut up the house until morning, at which time I ought, I believe, to have syringed thoroughly; but I put it off until evening, not having time to do it then. In the meantime, the day being a bright warm one, the leaves of almost all my trees presented the appearance of having been burned; the Pears and Plums particularly looked shrivelled and quite crisp and dry. Since then they have not improved, and now look as if they were dead, and many of the leaves have fallen off.

Now, as I am quite inexperienced in fruit growing (this being my first year), you would confer a favour on one of your readers by telling me what is best to be done. Where was I wrong in the operation? Is it likely I have killed the trees altogether, or are they only injured for this year, or will my prospect of fruit next year be destroyed? Would it be well to discontinue watering?—R. C. J.

[We have always been shy of recommending the lime and the sulphur cure, because some sorts of lime emit a stronger heat in slaking than others; and whilst some people would carefully allow the first strong heat to pass, and use plenty of water before using the sulphur, others would put in the sulphur whilst the slaking was commencing, and thus run the risk of burning and melting the sulphur by the excessive heat. Hence, as a matter of safety, we would recommend heating some iron vessel with water inside to 160° or so, and then painting it all over with sulphur, because at that heat the fumes prejudicial to the insects would be given off without any danger to the plants. Hence, also, syringings with sulphur water have been recommended. We think it is likely that your lime was too hot when you applied the sulphur, and that you also used too much sulphur. For such a house the three pots should have been pretty well slaked before adding the sulphur, and an ounce or two instead of half a pound, would have been sufficient. The syringing early the next morning ought to have been attended to; and if the day promised to be hot and sunny, plenty of air should have been given early, so that the house after the sulphuring should not have got hot. We fear the airing had also been delayed, and the whiter your house was inside, the more would it suffer from that cause. A little shading would also have been in your favour.

We should hope the trees had so far perfected their wood by the middle of September, that they will not be injured much for the following year. You will know if the buds are plump, and the young wood free from a shrivelled appearance.

The fruit this season will not be so good as if the leaves had remained green; but if they have sun they may be tolerable, as we have had fine Peaches at times on shoots that had not a green leaf, similar to the specimen shown at the Crystal Palace the other day. When the fruit is gathered, comparative dryness at the roots will cause your trees to rest sooner, and we hope that next season the trees will bear little or no traces of your present disappointment.]

BULBS FOR FLOWER-GARDEN DECORATION.

WITHOUT their use a flower garden must always look sombre and bare in the spring months. The present system of bedding has considerably interfered with the culture of bulbs; but with a little extra attention, the beds may be made showy from the time that vegetation commences in the spring. For instance: In a symmetrical or angle-bedded flower garden, where a good show of bedding plants is desired with the smallest amount of trouble, a fine effect at a distance will be produced by having a nice batch of bulbs—Crocus, Tulips, Hyacinths, Scillas, &c.—placed at the corners. The beds may then be rough dug in the winter in the usual way for the advantage of the regular bedding plants; and the filling the corners will give a pleasing appearance to the whole group in the spring. These bulbs in most cases may remain for several years in the same place—in fact, just so long that they may not get too deep like an Oxalis, or be thrown out of the ground like a Crocus, accordingly as the new bulbs are formed below or above the old ones. The beds may be levelled and planted, just as if no bulbs were there; and by the time that the bedding plants are spreading freely, the foliage of the bulbs will be decayed and out of sight. Of course, such corners in oval-rim or ridge-planting, though giving a lively appearance to the parterre, are not to be compared to a whole parterre filled throughout with shaded and contrasted colours. But our practice and observation would lead us to adopt the cornering or edging system in preference to planting in beds, if full justice could not be given to both bulbs and bedding plants: it may be inferred from this, that the bedding plants will do well in summer and autumn, and the bulbs also receive no injury from late planting, or the bedding plants being inserted among their decaying foliage in May. We have seen many beds so managed, but very rarely with much satisfaction for the whole of the season: making a hole with a trowel in a hard-crust bed, and there placing a bedding plant, is not the best way to make that plant root vigorously and blow freely; and the bulbs are apt to be blamed when we ought to censure our own carelessness or want of thought. A few beds well managed will confer more credit on the cultivator than many beds in a slovenly condition. Allowing, then, that full beds look better, when well done, than mere cornering or dotting, how various and beautiful are the combinations that may thus be easily formed! Here, for instance, is a little group of clumps just under the parlour window; the group being of a circular form, one round bed in the centre and six round it, branching out like the spokes of a wheel; plant the centre with the Queen Victoria Crocus, a lovely white, about two inches apart in the rows, and six inches from row to row, and then have two beds opposite with purple, two with yellow, and two with blue, and how nicely they will look! Or, if preferred, border the white centre with purple, the blues with yellow or variegated, and the purples with white; or the colours may be shaded in each bed. Perhaps there may be only one circular bed near the house that can be devoted to Crocus, perhaps nine or ten feet in diameter; this would look extremely elegant if filled with concentric rings of all the different shades of colour, white relieved with purple, purple with yellow, and edged with blue on the contrasting system, varying the edging according as the kerb or path round the bed is of a cold or a warm colour. If the shading of colours is preferred, the result will equally show that there have been thought and design in the planting; but there is no end to the modes in which even a single bed may be planted. We lately recommended a young lady to plant a somewhat larger, rather oval bed with Crocus in Lover's-knot style; and she told us that the effect was charming; the broadish bands of the knot were yellow, the enclosed spaces in the centre purple, the space round the bands was blue, and the striped and white finished the edgings. We have instanced Crocus as being so easily managed; but the same artistic arrangements may be as easily effected with Tulips of the early-blooming kinds, Narcissus, Hyacinths, &c. In all such cases we would prefer planting as advised under each division, and lifting

every year, but so as to secure the ripening of the bulbs: we will shortly state how this may be done, and yet not interfere with a preparation of the beds for bedding plants. In favourable seasons the beds of summer things will keep good until the end of October, then the beds are to be cleared; and if the bulbs are to have justice, the ground ought to be dug, aerated, and suitably prepared. Some bulbs would suffer from being out of the ground so long; therefore, secure a small space behind a fence or any such place, and plant all the bulbs rather thickly in sandy leaf mould on a hard bottom; from this they may be removed in October, November, and onwards, and planted in nicely prepared soil on a quiet, dull day. So much for the autumn preparation so as to give justice at planting-time to the bulbs.

Such early-blooming things as Snowdrops, Crocus, Scillas, and the earliest Tulips, will have pretty well ripened their buds by the beginning of May, and, therefore, may be carefully lifted and placed in the reserve garden, and watered a little before the leaves quite decay. Even the early Tulips, all the later and double kinds, and the best of the Hyacinths and Narcissus would receive more justice if they were planted in pots early in autumn, and plunged in pots when the beds were ready for them; and then, as soon as the flowering was over, the pots could all be taken up and plunged again in the reserved ground until the foliage decayed; and the beds could thus be properly forked and aerated and prepared for the bedding plants. The pots, thus once obtained, would last with ordinary care for many years, and the cultivator would have the satisfaction of feeling that he did everything he could do to promote the healthy growth alike of bulbs and bedding plants. Unless in late summers, Hyacinths suffer but little when lifted carefully out of the ground, and planted and watered, and, if required, shaded afterwards; but the labour and care would be lessened if the bulbs were in pots. Tulips need this potting much (if they must be moved when done flowering, to give justice to the bedding plants), as they suffer much for the future if a check is given to the foliage before it begins to decay naturally. — (*Carter's Gardener's Vade Mecum.*)

MELONS CRACKING.

THESE Melons are in a two-light frame on a dung-bed, with no heat excepting from a lining at the back. They are about the size of a hen's egg. They have been watered carefully.—Q.

[The careful watering should have been next thing to no watering at all in such weather as we have had this autumn. Over-much moisture and want of sun are the chief causes of cracking. Give more air, little or no water, and place a lining of sweet, hot dung round the frame.]

MAKING A GREENHOUSE OVER A KITCHEN, AND HEATING IT AND A WORKSHOP FROM THE KITCHEN FIRE.

"Having been a subscriber to THE COTTAGE GARDENER ever since the commencement, I venture to solicit your aid. Being about making alterations in my dwelling-house, can I heat a greenhouse and workshop from the kitchen fire? If so, how to do it in the most economical way? I require this because I am only a shoemaker, and amateur florist during my own spare time for pleasure and not profit. The kitchen at present is a lean-to, with slated roof. Now, I propose making a span-roof of glass and glass ends, just to exclude the frost in the winter, to grow a few plants. The greenhouse to be 25 feet long by 9 feet wide; the shop 17 feet long by 10 feet wide; height of the kitchen 6 feet 10 inches. The greenhouse to be over the kitchen, and the workshop over the brewhouse and passage. I have no more space, being bounded by the street on one side, and the churchyard on the other, so it is compulsion, not choice, to make it as proposed.

"The building is all up. I am not going to build it so, only to put a glass roof over the kitchen instead of the lean-to roof of slates. What should the floor be made of to prevent the water from going through into the kitchen, there being no floor at present, only lath and plastered to the joist?"—W. P. H.

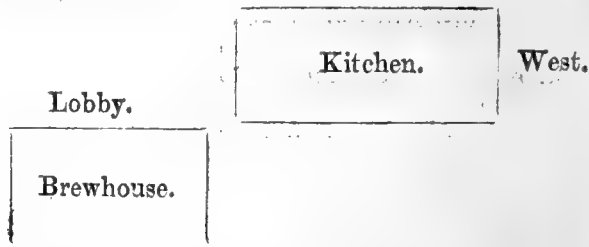
I FEEL an extra pleasure in attempting even to assist all such inquirers as "W. P. H." "Only a shoemaker" indeed! Why, some of the greatest men our country can reckon have been "men of the last and the leather." A cobbler it was—he owned he was a very indifferent shoemaker—that helped to give the

first grand impetus for the true civilisation of India. He might have taken some sage people's advice and "stuck to his last," and remained an indifferent cobbler to the end of his days. He felt he had other work to do, and he did it, and work for which future generations will have reason to be thankful. The old proverb, however, of "sticking to our last,"—in other words, holding fast to the occupation we have chosen as the means of livelihood, is a proverb of wisdom in general circumstances. All working is noble and honourable if rightly directed, and rightly conducted. It matters not whether the working be with the hands, the feet, the head, or, as is generally the case, all combined. Working is essential to our healthy existence.

Here, as in many other cases, it is wise to avoid extremes. Some so idolise work, and work chiefly in one track, that they have no time or inclination for thinking of anything else. Work to them is not only toil, but pleasure—the only pleasure they are capable of realising. They generally do excel in their one particular department; but for want of mental expansion they see and feel nothing of the beauty and magnificence so lavishly spread out around them. A goodly number of our young people are fast going to the opposite extreme. They are always dunning in your ears, that "All work and no play make Jack a dull boy," anything but workable. On pleasure trips and other amusements they spend too freely what ought prudently to be laid by as a store for the day of affliction or reverses in trade, and, what is worse, are apt to get a sort of an idea in their heads that they would be so happy without the working. They get into the habit of spending so freely on pleasure and play, that when a crisis in commerce comes, there is nothing but a hubbalooboo of want and misery. The avoiding of either extreme will be found to be the path of safety and of happiness. Our mental faculties so diversified were never intended to be all fixed in one direction. Even change of occupation gives a great amount of enjoyment. Our best working men make that change often not merely a source of pleasure but of profit, without taking into account the benefits obtained even for their bodily health. A neighbouring shoemaker is not more distinguished for the goodness of his articles and his plodding industry than he is for his success in gardening. Not a moment at "early morn or dewy eve" is lost; and he has often stated that but for these runnings and sweatings in his garden, he could never have managed to do so much with his last, to which he sticks, without letting the last, as in the case of the all-work people, stick to him.

Scores of all classes, from learned clergymen downwards, and especially those of sedentary occupations, and confined to large manufactories, have affirmed the same fact, and declared the garden had been the best medicine and physician to them. All conversant with horticultural and floral shows in the country, know well that the most successful competitors are generally weavers and shoemakers. Need I add, therefore, that I cordially wish success to our correspondent in his contemplated undertaking, and hope that that success may lead many to imitate his example?

I think I clearly understand the positions referred to. The greater part of the kitchen stretches westward beyond the main house, being bounded on the south by the next neighbouring house, and on the north by an open yard. Eastward of the kitchen is the lobby of the house. Over this kitchen and part of the lobby the greenhouse is to be made. Eastward of the open yard, and north of the lobby the brewhouse is placed, so that the south wall of the brewhouse runs in a line with the north wall of the kitchen.



Place an envelope on the right-hand side of your table, and another on the left-hand side, near to the first, but so that the farthest side of the second shall be in a line with the nearest side of the first, and you will see the position of the kitchen and brewhouse, and the greenhouse and workshop respectively. The fireplace in the kitchen I presume to be in the west end—that is, the farthest end from the workshop. Much of the interest and pleasure of the contemplated greenhouse will arise from an easy

private communication between it and the workshop, by opening a doorway into that part which will be over the lobby. A more public entrance should also be secured from the living-rooms. Of these matters nothing is said. Readers under similar circumstances will now be able better to follow us.

The heating both places from the kitchen fire we would do by a close boiler placed round the fireplace. If the boiler is to be placed there we would prefer one with water on the three sides, and so placed that the heat should pass beneath and round it. If there are only two inches or so between the sides of the boiler for containing the water the more freely would it act. If the boiler is there already, and of the common description in kitchens—that is, water at one side and back, its power will be increased by having it set rather open below. If, as is generally the case, there is a lid to such boiler, that must be fixed with red lead, or common lead, or otherwise, so as to be water and steamproof. A weight should be placed over it for some time at first. In future the boiler must be supplied from a ball-cock and cistern in the yard, a few inches higher than the heating-pipes in the greenhouse, &c.; or the water must be kept supplied from an open cistern in either of the places to be heated, and in connection with the heating-pipes. If no water was drawn from the boiler in the kitchen little supply would be needed. In general, there would be plenty of heat from such a boiler under ordinary circumstances in the daytime. In severe nights in winter a little coal would require to be placed close to the boiler at bedtime; and then, if there was a plate of iron over it, and one in front inside the grate, and leaving only openings for draught, the boiler would get the benefit of most of the fire. As already intimated, the more surface of the boiler exposed to the fire, and the less the water it proportionally contains, the better will the boiler act with the minimum amount of fuel.

Now for getting the heat from the boiler to the greenhouse, &c. If water is to be drawn from the boiler, the tap may remain as it is. According to what is stated above, if the supply equals the waste the boiler will be always full. A hole must be drilled in the top, or near the top, of the boiler to receive a one-inch pipe as the flow-pipe, and another near the bottom for the return-pipe. If these pipes were placed where the fire had access, they would require to be iron for three feet or so in length. But they may as well be placed on the sides or front of the boiler, to which the fire has no access, and then lead pipes would do admirably, and have the advantage that they may be bent any way at pleasure. They will be all the firmer fixed if the ends protrude an inch or so into the boiler. These pipes can be easily carried into the greenhouse to the space most suitable; and after getting clear of the fireplace had better be enclosed against the kitchen wall in a wooden box packed with sawdust, so that the water shall not be cooled in getting to the places to be heated.

Now the economical is to be a first matter of consideration, and that will be kept in view. There is just one little point omitted by our correspondent—and that is, whether or not the floors of the greenhouse and the workshop are on the same level, or so nearly alike that the heating-pipes in both places can easily be placed on a level. So far as the mere heating of the places is concerned, it will not be of great importance whether the pipes are two inches or two feet from the floor, though it will make much difference as respects the comfort of the workmen and the state of their feet in winter.

Before supposing several cases, so as, if possible, to meet exactly the present one, I may mention that to heat such a greenhouse efficiently would need two flow-pipes and one return of from three to four inches in diameter. If doors, &c., did not come in the way, a flow should go along the ends and each side, a return coming back on one side. One flow and return should go round at least two sides of the workshop; three sides would be better. The flow in the greenhouse I should connect with the lead pipe from the top of a boiler with a T-piece, if I could take the pipes round the sides; and if doors &c., prevented that, I should take two four-inches along the side of the greenhouse next the workshop, connected with the lead pipe with a rounded J so that the pipes may be near each other. These pipes may be of metal, or tin, or galvanised iron, if the workmen do not kick them. These latter will last a long time if rested on wooden blocks, with air around them, and where there would be a boarded floor under them. The flow-pipes might be nine inches from the floor, and the return a few inches. The joints could easily be formed with red or white lead, and no painting would be required. In joining the inch-lead pipe to these larger ones, I should use a plug of seasoned wood, to

fit tightly with a little lead round it, having previously drilled a hole in its centre to receive the lead pipe securely.

So much for economical minutiae. I shall now suppose that the pipes can be placed in both places on the same level, and that it is desirable to heat both together, or the greenhouse by itself chiefly at night. To avoid the expense of a ball-cock cistern and valves in the pipes, make a stout box of good deal $1\frac{1}{2}$ inch thick, 20 inches long, 15 inches wide, and 15 inches deep—larger if you like—provided with a lid, and set it at the right level at the north-east corner of the greenhouse, or just inside the boundary wall of the workshop. The flow-pipe or pipes may enter this watertight box about the middle, and the return-pipe near the bottom. This will complete the circulation for the greenhouse. Two pipes on the opposite side will give the flow and return for the workshop; and when heat is not wanted there, both ends of the pipe in the cistern may be stopped with wooden plugs, or the box may be divided in the middle by a moveable board, working between fillets in the way of a sluice. When in summer no heat is wanted in the greenhouse the water may be reduced, so that the flow-pipes should be empty, or a common tap may be fixed on the lead flow-pipe, which will stop the flow at once. The return-pipes will not trouble you under such circumstances.

Any amount of heat may be obtained in the workshop when not wanted in the greenhouse by taking the flow from the boiler there first; but I have supposed above that the shop is only to be kept comfortable, and extra heat in the greenhouse can be kept down by a greater amount of air.

If it should happen that the pipes in the workshop must be lower than the pipes in the greenhouse, the same mode of heating will answer, and you may have what piping in the workshop you like; but one hole for the flow-pipe in the cistern will be sufficient, and you will require a lead pipe or any other you prefer, on a lower level through the kitchen to join the pipe that comes from the bottom of the boiler. Under such circumstances the heated water from the cistern will descend freely, but it will not ascend again so freely to keep up the circulation.

If the pipes in the workshop must be much above the pipes in the greenhouse, then, whether the supply-cistern be in the greenhouse or the workshop, it must stand higher than the highest pipe, and the flow-pipe go direct to the cistern. On this supposition the flow-pipe could either come along the kitchen wall, or, better still, through the greenhouse. Two pipes from the other side of the greenhouse would heat it amply, and at the west end above the fireplace communicate at once with the return-pipe that enters the bottom of the boiler. All will be simplified if you bear in mind, that with a close boiler and a close pipe you can heat the water in a much greater height than you are likely to want it; that from a flow and return pipe on a lower level but close, you can take branch pipes to any moderate height, arranged in levels, stacks, or columns, if there is an air-pipe at the highest point; that from an open cistern at the highest point, you may heat different levels below that point, but each level must have a separate communication with the main return-pipe; and that once the main flow enters such a cistern, you cannot afterwards take heat higher from it.

Under the circumstances the best floor for your greenhouse will be well-seasoned boards, joined at their edges by plough and tongue. You need never have more water than is used for the common washing of a floor. You could also use saucers for your plants, and if very particular, might cover the floor with oil cloth.

In forming the greenhouse I should prefer to have side-walls of wood above the floor of from two to three feet in height at least; if four or five all the better. The roof I would have fixed, all stout bars—say $2\frac{1}{2}$ inches deep, and 2 across, and 1 foot apart, to receive glass of that width; and the bars fixed to the sides and ridge-board, that ridge-board being from 7 feet from the floor. The ends might be made to open, or three slides 18 inches in length for bottom air might be placed on each side. Some half a dozen openings at least should be made at the ridge a foot or fifteen inches long, made to swing on pivots or to slide above the other glass. An additional thickness in the sash-bar there would make all that easy. If a little more expense were no great object, there might be two ridge-boards, separated nine inches from each other by cross pieces every four feet; and these pivots would also support a cowl of two boards outside to keep the wet out, and yet leave openings along the side to admit air freely. Boards could be hung on pivots between the openings, as frequently described, and opened and shut at pleasure. It will

be of importance to be able to give abundance of air. I have been the more particular, so that the answer may suit many more besides our correspondent, some dozens to my knowledge having similar plans of heating in view. R. FISH.

PLANTS FOR EARLY SPRING BLOOMING IN A GREENHOUSE.

"AN IRISH SUBSCRIBER" wishes for directions how to treat Myrtles, Jasmine, Berberis Darwinii, and Deutzia gracilis (which are all in pots, plunged out of doors in coal ashes), so as to have them large specimens and in flower in early spring in the greenhouse; whether they should be now repotted, in what soil, and taken in-doors. He has fine plants of Dielytra spectabilis in the open ground, the leaves just turning yellow. When should they be potted to have them flower in the greenhouse in spring? What soil? and will they answer best to keep in a pit, greenhouse, or vinery? He has no hothouse. They succeeded badly the last three seasons, but the plants look very fine now.

[If you had studied our pages carefully, you would have seen that, as a principle, we disapprove fresh potting late in autumn all such plants as are expected to bloom early in spring. All the shrubs you name can be kept in a cold pit in winter, or in the greenhouse, unless the Jasmynes are tender, and placed in the greenhouse, they may be expected to bloom about March or April. If wanted earlier, placing them in a higher temperature, beginning at 45°, and rising gradually in a fortnight to 55° and 60°, will bring them earlier into bloom. Raise the Dielytra carefully as soon as may be, and pot in light, rich loam, and do not use a pot much larger than you can put the roots in nicely, and leave the buds well exposed. If after potting you could plunge the pot in a mild hotbed out of doors, with nothing over the buds, so as to keep them cool, the pot would be sooner filled with fresh roots, and the flower-stalks would come stronger, whether such pot was allowed to come on in the greenhouse or forced in a forcing-house.]

WHAT TO LOOK FOR ON THE SEASHORE.

(Continued from page 9)

ECHINODERMATA (Continued).

THE Echinidæ, or, as they are popularly called, Sea Hedgehogs, Sea Urchins, and Sea Eggs, are cirrho-spinigrade Echinoderms; so called in consequence of their locomotion being effected by means of suckers and spines jointly, thus combining the powers of the true Star Fishes and the Serpent's-tails. Of all the Radiata the Echinidæ are the most perfectly preserved, owing to their hard calcareous covering and the wonderfully compact manner in which its parts are fitted together, so that fossil specimens of extinct species are found almost as perfect as those of a recent species prepared yesterday. The Sea Urchins may be chiefly distinguished from other Echinoderms by these peculiarities:—their form is invariably more or less rounded; they are destitute of arms; and their shell, or rather integument, is composed of calcareous matter, so as to form a series of regular plates studded with tubercles, jointed on to which are spines of various forms and sizes; the ambulacra, or orifices in the shell for the extension of the suckers, are variously arranged on the surface; the digestive canal has two openings—a mouth, which is always below, and sometimes armed with an internal dental apparatus, and a vent which varies considerably in its position; the intestine is winding, and attached to the inner surface of the shell by a membrane, the surface of which, as well as of the membrane lining the shell, is covered with vibratile cilia, and is supposed to answer the purposes of respiration; a nervous system is said to have been traced in these creatures, but the theory wants confirmation; they are free throughout the whole of their existence, although they adhere in some instances so firmly (by means of their suckers) to rocky places, as to render the tearing them away an operation dangerous to their existence.

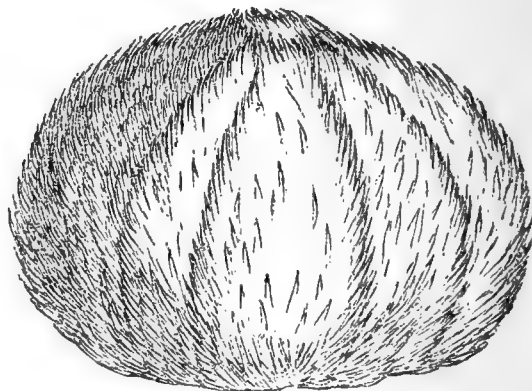
The British species of Sea Urchins are divided by Professor Forbes into three families, and we can certainly do no better than follow his division, which is into *Cydarites*, *Clypeasteriæ* and *Spatangaceæ*.

CIDARITES, the first family.

THE PIPER (*Cydaris papillata*).—This is one of the most elegant of our native Sea Urchins, and at the same time one of

the rarest, being confined to the Zetland seas. It derives its name from a fancied resemblance the Zetlanders find in its spines to the drones of a bagpipe. It is also called "the king of the Sea Eggs," and is always found in the deepest fishing water, chiefly affecting a rocky bottom. The Piper is of a flattened globular form, and measures about an inch and three-quarters across. Its surface is covered with spines, which differ in character: one kind, few in number, being very long—about an inch and a half in length or sometimes more, slightly club-shaped, and deeply furrowed; the other kind very short, flattened, and finely streaked. This species is not likely to be met with by ordinary tourists.

THE COMMON SEA URCHIN (*Echinus sphaera*).—This creature is often called the Sea Egg, and varies considerably in shape.

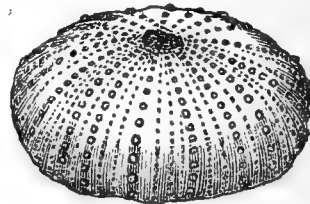


ECHINUS SPHERA WITH ITS SPINY COVERING.

It is sometimes almost globular, and occasionally much depressed. Its size, also, is by no means constant, but seems to depend on the localities in which it is found; it averages, however, a circumference of ten or twelve inches, and a height of two to three. It is covered with numerous plates, all dovetailed one into the other with the most perfect nicety, and bearing on their surface upwards of four thousand spines, each spine of a highly complicated structure and moving freely on its socket.

When the creature is alive the whole of the external surface is coated with a delicate membrane, as are also the spines, the joints of which are rendered much more flexible by means of this covering. The mouth is situated in the midst of a circular web of muscular skin, which occupies the concave and central part of the base, and which is studded with calcareous tubercles. From this mouth are seen projecting the five points of the teeth, which dental apparatus is known as "Aristotle's Lantern." The common Sea Urchin is usually of a reddish or purplish colour with white spines, sometimes tipped with purple also. It lives in various depths of water, extending its range from the shallows of the shore to the deep sea residences of the Corals. It usually congregates in greater numbers on a clear sea-bottom. It is found on all the coasts of Great Britain and Ireland, and is equally common in all localities. It is a general article of food abroad, and is said to be very frequently eaten by the poor at home. It is supposed to be bi-sexual.

THE PURPLE-TIPPED SEA URCHIN (*Echinus miliaris*).—This is one of the smallest of our native Sea Urchins. It is found on



ECHINUS MILIARIS DIVESTED OF ITS SPINES.

oyster-beds mixed with the common Sea Urchin; and from its similarity to it and its diminutive size is frequently passed over as the young of that creature. On examination, however, it will be seen to be quite a different species, having characteristics peculiar to itself—amongst others, its long purple spines, which can never be confounded with the white ones of the *Echinus sphaera*. This little creature measures commonly about three-fourths of an inch across, and about three-tenths of an inch in height. Its body is rose colour, with white tubercles studded on it. The primary spines are purple with yellow bases, and nearly three times as long as the secondaries, which are yellow:

when the spines are rubbed away the shell presents a pretty radiated appearance. The Purple-tipped Sea Urchin is found abundantly in the Irish Sea and on the west coast of Scotland, in England also on the southern shore, and in Guernsey.

FLEMING'S SEA URCHIN (*Echinus Flemingii*).—This is by far the finest specimen of British Sea Urchins, measuring about thirteen inches and a half in circumference, and about three inches and a half in height. In form it may be described as conico-globose. The colour of the body is yellow, with two broad longitudinal stripes of orange-red. The spines are of a yellowish-white, with purple bases, and streaked. If these spines be rubbed away the tubercles will be found elevated on prominent plates.

This creature is only to be met with in very deep water. It was first caught in Zetland, but has been taken at Youghal on the south-west coast of Ireland.

THE PURPLE SEA URCHIN (*Echinus lividus*).—This is a remarkable species, and is peculiar, as far as the British Isles are concerned, to Ireland. It measures, without its spines, about two inches in diameter, occasionally more. The spines are about an inch in length, very slender and tapering, and of a deep shining purple colour. There is another variety having its spines much shorter and thicker, and of an olive-green tint. On the spines being rubbed off, the body is found of a brownish hue, and has a highly ornamental appearance, from the great prominence of the tubercles on its surface. The body is generally round. And it is found most frequently located in a cavity hollowed from rock or limestone, exactly corresponding to its shape, and evidently formed by itself; by what means, however, remains yet to be discovered.

These creatures are gregarious, and may be seen abundantly in rock-pools, stationary in their holes, large and small together, each in a cell exactly suited to its dimensions, where their perfect forms and long, purple spines present a most elegant appearance. Singularly enough every hole is coated internally with a thin layer of Coral, which is stated to be the common *Millepora*.

THE SILKY-SPINED SEA URCHIN (*Echinus neglectus*).—This specimen, which is dredged off the Orkney and Shetland Islands, is of a flattened angular form. In colour it is a dark brownish-purple, having pinkish-white tubercles, and greenish spines; it is frequently confounded with a depressed variety of the common Sea Urchin, and at first glance bears a great similarity to it. The body is very thickly clothed with spines, of nearly equal length, and having a fine silky lustre. They are streaked longitudinally; but this appearance requires the aid of a magnifying power to distinguish it. The largest specimen found measured a little more than nine inches in circumference, and was one inch eight-tenths in height.—W.

(To be continued.)

SPERGULA PILIFERA.

HAVING read many contradictory statements regarding this small plant as suitable for a lawn, will you permit me to say a few words respecting the experience I have had with it? In the spring of 1859 I had a small plant of it sent to me about an inch in diameter. I planted it in a pan about one foot over, which it covered by the autumn, and was much admired by all who saw it, which induced me to purchase a larger quantity.

When I received it from the nursery I parted it into plants of about an inch in size, and planted them out in the kitchen garden one foot apart in the month of October. It kept alive during the winter, but made no progress until the spring, when it began to show signs of life, but made very slow progress. Towards the middle of summer, being dissatisfied with the growth it was making, I took the greater part of it up, and re-dug the ground, and divided the plants again. One part I planted from six to seven inches apart, another I planted about four inches apart, which has now got close together, and made a beautiful, smooth, firm surface of a most lovely green. The part which was from six to seven inches apart has partly met, but I am doubtful whether it will form an unbroken surface this season. The piece I left as planted in October is still three to four inches from meeting. I think if it is planted out in the autumn or spring seven inches apart, in any common garden soil, it will form a close surface during the summer.

I have had many discouragements from several persons who saw it in the winter, and at the slow progress it made in the beginning of the summer, telling me I was wasting my time and

ground for what I should have ultimately to abandon. However, they have now changed their ideas respecting it, since they have seen it coming to perfection, and think it would be desirable to have an edging, or even a large patch of it, for the sake of the green colour.

Would Mr. Summers, or any of your correspondents, state whether it will succeed in wet or shady situations, as I now think of removing the greater part of it to form a lawn?—**J. HALL, Hither Green, Lewisham, Kent.**

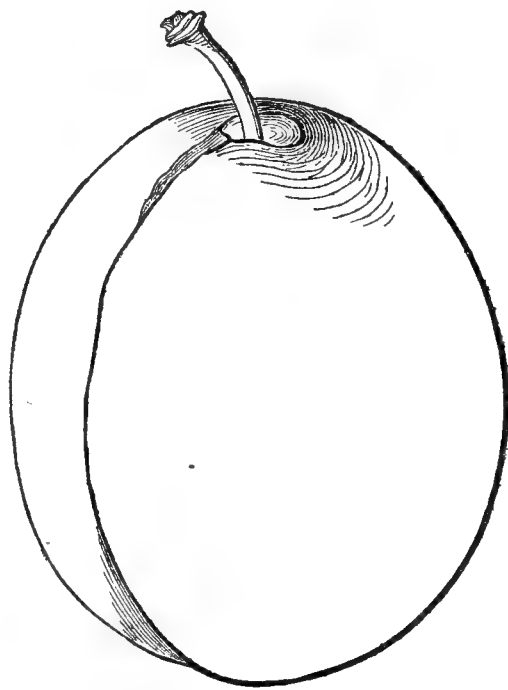
[Last October was out of the usual run, and spoiled other things more than *Spergulas*. It stopped them and opened the mouths of the croakers. The progress of a great and just revolution is more safe by the sure and certain step-by-step progression, as in your own instance. We will readily admit all that can be urged either for or against *Spergula*; for its substitution for grass on lawns involves too much expense, and the risk of too much serious disappointment to be treated lightly. We believe that many persons think less highly of *Spergula* than we do, because they have not sufficiently rolled it.]

FRUITS AND FRUIT TREES OF GREAT BRITAIN.

(Continued from Vol. XXIV., page 361.)

No. XXX.—THE DIAMOND PLUM.

THOUGH not a new plum, the Diamond is one which is not very widely known, nor so much cultivated as its merits demand it should be. As a cooking plum it is, perhaps, unsurpassed by any other of its season, and by those who prefer a briskness in their preserves it is highly esteemed for its fine sprightly acidity.



The fruit is large, being two inches long and an inch and three quarters wide, of a handsome oval shape, and marked on one side by a rather deep suture extending the whole length of the fruit, and which is deeper at the stalk-hole.

Skin thick, tough, and membranous, of a uniform very dark blue, or almost black, and covered with a thick bluish-white bloom.

Stalk about three quarters of an inch long, inserted in a deep, round, narrow hole, which is cleft on one side by the suture.

Flesh yellow, rather coarse in texture juicy, and with a very decided, but agreeable acidity, and when highly ripened rather sweet.

The fruit ripens in the middle and towards the end of September. The tree is a most abundant bearer, particularly when it becomes a little aged; and then it produces long pensive shoots, which in a good fruit year are completely laden with long clusters of this fine large fruit.

This is a valuable household and market plum, and was raised accidentally about forty years ago in the nursery of Mr. Hooker, at Brenchley, in Kent.—H.

KEEPING APPLES AND PEARS.

I MADE some remarks in the previous spring on keeping Apples and Pears exposed amongst grass during winter, and may have mentioned that I sent some specimens of them to the Pomological Society. But as that winter was not severe, I have the following to state in favour of the plan, so contrary to the general belief that frost is as injurious to both Apples and Pears as it is to Potatoes. Last autumn I put half a dozen each of a few different kinds of Apples and Pears into a Sea-kale pot on grass covered with a net to keep out mice and birds, on the north side of a fence. And though thus exposed to the most severe winter since, perhaps, that of 1838, I found on the 16th of February most of them in good condition; while the ripest of the Pears, after being kept a few days in a warm vinery, were of good flavour. I sent some specimens of them to the Pomological Society, but never saw the report of those once-severely-frozen Apples and Pears. However, they appeared equal, both in keeping and flavour, as those of last year, which were reported thus:—"March 3rd. Beurré Rance was sweet and juicy. Winter Crasanne ripe and juicy, but tasteless. Knight's Monarch and Suzette de Bavay, under its own name, as well as under the name of Jean de Witte, hard and unripe, but containing the elements of juiciness and sweetness of Apples. The best of those kept as above, was Birmingham, under the name of Court of Wick, small, firm, juicy, and sweet. The rest were chiefly kitchen Apples, amongst which were fine specimens of Gogar Pippin, a firm, good-keeping Apple, not so well known as it deserves, and the White or Norfolk Stone Pippin." Although I have made those remarks, I wish it to be understood, that perhaps the softer kind of both Apples and Pears may be injured by severe frost, and also that much injury is sometimes done by handling or removing them while frozen.—J. WIGHTON.

CULTURE OF FERNS IN BASKETS.

I WAS well pleased to see the communication from "T." in THE COTTAGE GARDENER, respecting the cultivation of Ferns in baskets; and to all lovers of that beautiful class of plants I think the subject should be of great interest, not that we consider it at all new, but that the plants thrive so much better in baskets than in pots, and some of the species are seen to so much more advantage when suspended from the roof of the house in which they are grown.

The Horticultural Society called attention to the subject at the great fruit show held in St. James's Hall two years since, by offering special prizes for "Ferns in baskets suspended;" but none were brought forward, and judging from the collections we have had the pleasure of looking through during the last few years, the plan does not seem to have been adopted in any instance in a general way, although we frequently meet with individual specimens. The usual plan seems to be pots, brick pots, in most plant-houses of the present day; so much so, that in several cases we have thought that the general appearance was more pots than plants, and these looking far more interesting in some exotic ferneries where they are frequently getting green.

Nearly three years since we had a plant each of *Adiantum cuneatum* and *A. assimile*, in nine-inch pots. They had ceased to thrive, and we thought it necessary to give them a shift; but on turning them out of the pots it was found that the tiny creeping rhizomes of the plant had, on coming in contact with the sides, turned downwards, and were making rapid progress towards the drainage-hole in the bottom, and each of the rhizomes apparently ready to push out hundreds of fronds immediately they could get to the light.

This suggested the idea that if they were put into baskets we should soon have quite a large plant. Two of these were procured about twenty inches in diameter, the plants were transferred to them, and in about two or three months from that date we had two of the most beautiful globular masses of elegant little fronds that we ever beheld, with not even room to get a finger through (under or over) to the basket without at first moving the fronds on one side. Those have never ceased to present the same interest up to this time, and they appear as though they will be just as good for the next five years. No one can tell what the baskets are made of, as they are quite invisible. Since that time we have moved a great many other Ferns with creeping rhizomes to baskets, and to our mind not a

phænogamous plant in our collection possesses so much interest all the year through as those little plants.

Davallia dissecta, *bullata*, and *pentaphylla*, have quite surrounded the baskets, and seem to cling so pertinaciously to their quarters, that, when I have wished to remove a bit for a friend, it reminds me of attempting to move a limpet from a rock—mutilation is the usual consequence. *Phlebodium percussum* and *stigmaticum* are now highly interesting objects—the former showing off its beautiful fructification so well suspended, and the latter embracing the now decaying wood of the basket, as though it would say, "We part not until death." We never saw the real beauty of the genus *Nephrolepis* until they were put into baskets. *Adiantum formosum* sends the rhizomes and fronds in all directions round the basket; the former six or eight inches below, while formerly they used to burrow in the pots, and thus lose all interest.

We have been moving a fine plant of the lovely little *Pteris scaberula* from a pot to a basket. Next year we expect it quite a picture. Indeed, all the plants that we have changed seem to thrive admirably; nothing can be more striking than the change in appearance of *Polypodium plumula*, and a few others, which appeared sickly while in pots, but now grow quite rampant. For plants that grow from a single crown, as *Blechnum corcovadense*, *Cibotium Schiedii*, &c., we have adopted a galvanised wire basket made in the shape of an ordinary flower-pot to the sizes required. These, in every instance, succeed just as well as the others.

Mr. Beaton when here in the spring was pleased to name them crinoline pots, but since that time we have quite covered the crinoline appearance of some of them, by planting a dwarf species of *Selaginella* around the sides. This covers the whole very rapidly, and to our eyes looks quite unique, presenting as it does one mass of luxuriant vegetation.

Perhaps some of your numerous correspondents would be kind enough to tell us if they have adopted baskets at any time, and with what success. Your very able coadjutor, Mr. Fish, would much oblige myself and several other readers of THE COTTAGE GARDENER, if he would give us a chapter on baskets, with what he considers *pro* and *con*. We feel quite disposed to try more of them, unless there are "breakers a-head," and these, if any, I feel sure Mr. Fish with his great experience could point out.

On a future day I will write a few lines concerning other plants that we have put into baskets, including *Heaths*, *Begonias*, *Fuchsias*, &c., and in what manner we consider the plan superior to pot culture. Meantime, I may say that my object in jotting down the above was to call the special attention of amateurs and others who take personal interest in their plants to "T.'s" communication.—J. A. SUMMERS, *Gardener to A. Mongredien, Esq., Forest Hill.*

PLANTING A BED OF TOM THUMB GERANIUM.

COVERING A TRELLIS WITH TROPEOLUM STAMFORDIANUM.

I INTEND forming some new beds for growing Tom Thumb Geraniums and Calceolarias; but previously to fixing upon their dimensions, I should like to know at what distance apart they ought to be planted, one plant from another? How far from the edges of grass should they be? Would there be any difference in the distance, supposing the Tom Thumbs were plunged in pots?

Would *Tropæolum Stamfordianum* grow sufficiently to cover a wire fence 3 feet high? What would be best for training upon a wire fence 18 inches or 20 inches high? Both fences have good exposures.

Is there any white variety of *Calceolaria* worth using for bedding?—AUREA FLORIBUNDA.

[The most respectable diameter for circular beds for Tom Thumb, variegated Geraniums, and Calceolarias, is just six feet. The distances at which all Geraniums and other bedding plants are planted are regulated entirely by the size of the plants. We have planted very small Tom Thumbs six inches apart and three inches from the grass; also at nine, twelve, eighteen, and twenty-four inches apart, and from three to nine inches from the grass. To have only four or five inches from the leaves of one to those of the next is the best rule for them. Tom Thumbs should never be planted in their pots.]

Tropæolum Stamfordianum will cover a wire fence double the height of three feet, and just as it gets to the top the frost comes

and kills it. What would be best to train on a wall eighteen or twenty feet depends upon what country or kingdom it is in, and often on what part of either.

There is no white *Calceolaria* good for beds or for anything else. Recollect, however, that *Stamfordianum* will not grow two feet high in some countries, or in many parts of Her British Majesty's dominions. Why then do the sons of men write to us from nowhere, to know what should be done there?]

STOVE ORCHIDS.

(Continued from page 5.)

SHADING.—The house for Orchids being put up, the next thing to think of is how to shade the plants from the burning beams of a summer's sun. At that season of the year the leaves are young and tender; and if a drop of water is on any one leaf and the sun strikes it, the lens formed by the water becomes a focus, and on that place a burn or scald will take place. To prevent such a mishap the glass should be shaded. Some put on it a covering of whitewash or some other daub, which is certainly effective and saves trouble; but the objection to this mode is, that the shading being permanent, on dark days the plants suffer from want of light to ripen the pseudo-bulbs: this is a great evil.

Undoubtedly, the best shade is one that can easily be drawn off whenever the sun is clouded. Perhaps the best material for this purpose is the one named Shaw's tiffany; it is quite stout enough to intercept the rays of the hottest sun. To apply it so as to save trouble, procure a pole, about two inches diameter, rather longer than the length of the house. At one end fix a wheel six inches diameter. On each side of this wheel nail round boards projecting two or three inches beyond it. When this is done a kind of groove is formed; and in this the cord to let down and draw up the shade is coiled, one end being nailed to it. The shading material is then nailed to the pole, it having been first sewed together the size of the roof. The pole with the canvass nailed to it should then be laid on the roof. A flat, long, narrow piece of wood should be nailed firm to the highest point of the roof; then stretch the canvass, and nail the loose side to this flat piece of wood. Use some kind of binding to this edge, and nail through that binding. Then take hold of the other end of the cord, pull at it, and the wheel will turn round, and, of course, the pole turn round also, wrapping up the canvass neatly as it rolls up to the top or apex of the house. The rope may be wrapped round a kind of fixed button in a handy place, and tied there till shade is needed; then loosen the end of the cord, and let down the shade gently to the lowest part of the glass, where a few stops of iron or wood should be firmly fixed to prevent the pole rolling off the house and tearing off the canvass from the flat piece of wood. To make this canvass last longer, let a weather-board be fixed on the top of the house; and when the shade with its pole is drawn up, it will be under this weather-board and be protected from wet. In winter, when no shade is required, the canvass may be unfixed and put away in a dry shed till spring.

MODE OF GIVING AIR.—When the thermometer indicates a temperature too high it may be lowered by giving air. In spring the external air will be too cold to be admitted direct to the plants: hence it is desirable to let in the fresh air just over hot-water pipes. To accomplish this make openings in the wall, and fix to these opening sliding shutters. When these are opened the air rushes in, and becomes not only warmed but also charged with moisture arising from the tanks placed on the ascending pipes, and is then highly beneficial to the health of plants. To allow of the escape of the heated air, a few openings should be contrived at the highest part of the roof. In summer, when there is no heat in the pipes, the outward atmospheric air is so warm that the air when admitted will not injure the plants in the least.

ARRANGEMENT OF THE PLANTS.—The central stage may either be a succession of steps or one broad platform. In either case it is desirable to make each into a shallow watertight cistern, to be filled with small pebbles; or, if kept empty, place in them broad pans just high enough to be above the level of the sides. These cisterns are intended to hold water during the growing months, and thereby supply moisture to the air, and also protect the plants from the destructive cockroaches.

Around this central stage runs the walk, and on the side next the wall a platform may very conveniently be placed. The

surface of this platform may be formed exactly like the central stage; and on it many smaller plants may stand, and also any that may go earlier to rest than the general collection.

SUSPENDING PLANTS.—These require hooks, or large-headed nails, driven into the rafters to hang them to; or a strong iron rod kept well painted may be suspended over the walks, and at proper intervals hooks made in the shape of the letter S placed upon the rod, and to each of these hooks a basket or a block containing a plant is suspended. There is this advantage of having these plants hanging over the walk—namely, that when watered or syringed, the surplus water falls into the walk and not on the plants.—T. APPLEBY.

(To be continued.)

BLOOMING OF RHODODENDRON FALCONERII.

CAN you inform me if *Rhododendron Falconerii* has bloomed many times in this country? I have a good plant with a bloom-bud upon it, which I think is caused by my keeping the plant pot-bound, and subjecting it to sudden and severe changes of temperature.—JOHN STEVENS, *Gardener, Malvern Hall, Solihull.*

[It has not bloomed often to our knowledge. The first time it bloomed was in 1856, with Mr. Standish, and with Mr. Fairie, near Liverpool. The flowers are greenish-white.]

KEEPING HARDY BULBS,

AND SOWING ANNUALS IN A COLD CONSERVATORY.

"KATE" proposes, instead of planting the bulbs named below in the ground at once, to plant them in pots, and keeping them in a cold conservatory for the winter, and to turn them out in the borders in April. Will it answer for *Ixias*, *Sparaxis*, *Gladioli*, *Alstromeria chilensis*, *Antholyza*, *Babiana*, *Camassias*, *Tritoma*, *Vallotas*, and *Watsonia*? The ground is damp, and "KATE" finds the roots are injured or disappear after the first season. It has struck her she might succeed by not turning them out till the spring. They would not be forced, as the house is very large and airy. Would annuals sown in boxes be likely to live through the winter in the said house, and to be turned out in April, instead of sowing them in the open ground? The situation is twenty miles west of London.

[All the bulbs in your list would do better in a cold frame, with the lights entirely off every fine day till next April—that is, better for turning out. The *Camassias* are quite hardy. *Tritoma* the same, and *Vallota* and *Watsonia* just all but hardy. Any of the rest will be very liable to fail in the dry atmosphere of a large house; but if "KATE" is so good a gardener as to perceive the first symptoms of distress or disturbance in the growth of her bulbs, all the kinds from the Cape, and all half-hardy bulbs could be kept in the house. While in cold frames, if they get sufficient air and the frost is kept from them, anybody could easily keep all such bulbs without a grain of knowledge of plants. It is just the same with annuals—it all depends on the skill of the person who attends to them; and any one who can manage *Mignonette* seedlings through the winter could grow every one of the annuals in that house the whole winter. A very good hit indeed.]

HYACINTHS FOR WATER-VASE AND POT CULTURE.

THE following are six first-class Hyacinths for water, all single (doubles do not succeed well):—Grand Lilas, azure blue. Baron Van Tuyll, dark blue. Elfrida, creamy blush. Grand Vidette, pure white. Norma, pale waxy pink. Robert Steiger, bright crimson.

Add for a dozen (for water):—Madame Hodgson, fine pale pink. Mons. Feasch, pale pink, changing to almost scarlet (this Hyacinth lasts in bloom longer than any other). Grand Vainqueur, pure white. Grandeur à Merveille, pale blush. Charles Dickens, greyish blue. Prince Albert, black.

A first-class dozen for pots:—*La Tour d'Auvergne (double), pure white. *Compte de St. Priest (double), light blue. Duke of Wellington (double), rose. Prince of Waterloo (double), pure white. Blocksberg (double), marbled blue. Laurence Coster (double), indigo blue. Prins Van Saxe-Weimar, dark blue.

Amy (single), bright red. Belle Quirine (single), bright pink. *Norma (single), waxy pink. *Robert Steiger (single), bright crimson. *Elfrida (single), creamy blush. Victoria Regina (single), pure white. Argus (single), bright blue, with a distinct clear white eye. Grand Vidette (single), pale blue. Prince Albert (single), black. *Heroine (single), canary yellow. Köning Van Holland (single), orange yellow.

Those marked thus * are almost indispensable in any collection on account of colour. The price of the dozen, for water, 10s. 6d.; the first half dozen, 5s. 6d. The dozen for pots about 12s. 6d.; including the other six marked thus *, for 18s.—JAMES CUTBUSH, Highgate Nurseries.

[The above will serve as an answer to "A SUBSCRIBER," "ETONENSIS, and other inquirers.—EDS. C. G.]

LIST OF ORNAMENTAL FERNS—PLANTING A CIRCULAR BED WITH VERBENAS.

"M. G." would feel very much obliged to any correspondent who would give him a list of eight or ten stove Ferns of good and beautiful kinds. He has—*Pteris tricolor*: *P. argyrea*; *P. tremula* (G. H.); *P. serrulata* (G. H.); *Adiantum curvatum*; *A. formosum* (G. H.); *A. pedatum* (hardy); *Gymnogramma ochracea*; *G. tartarea*; *Cyrtomium falcatum* (hardy); *Phlebodium aureum*; *Myriopteris* (i.e., *Cheilanthes*) elegans.

"M. G." has also a round bed on grass about six feet across, he wishes to fill this with Verbenas next year. He proposes making a small round in the middle of the bed of Mrs. Holford, then a ring of *Géant des Batailles*, then *Invincible*, and would be glad to know what colour to put next.

["M. G." should add to his collection, which contains some greenhouse and hardy kinds, the following, which are all highly ornamental stove species:—*Anemia collina*, *Adiantum concinnum*, *Asplenium Belangeri*, *Cheilanthes farinosa*, *Davallia dissecta*, *D. polyantha*, *Gymnogramma peruviana argyrophylla*, *Goniophlebium appendiculatum*, *G. subauriculatum*, *Nephrolepis davallioides*, *Polypodium plumula*, *Phlebodium sporadocarpum*, *Pteris scaberula* (greenhouse). Or if any of these are too expensive, there is *Pteris longifolia*, *Pleopeltis pustulata*, *Platyloma rotundifolia*, and *falcata*, *Onychium japonicum*, *Nephrolepis exaltata*, *Hypolepis tenuifolia*, *Blechnum polypodioides*, *Asplenium fragrans*, and *A. bulbiferum*, all of which are pretty low-priced Ferns, and most of which will succeed in a greenhouse temperature.

Verbena Mrs. Holford in the centre, and *Géant des Batailles* round it, will need *Purple King* on the outside to make a nice arrangement; but the bed is two feet too narrow across to show the three to advantage.]

ENTOMOLOGICAL SOCIETY'S MEETING.

THE September Meeting of the Entomological Society was held on the 3rd of that month, the chair being occupied by H. T. Stainton, Esq., the Vice-President.

Mr. Waterhouse exhibited living examples of *Tricodes hispidius*, in the larva, pupa, and perfect states, forwarded to him by Mr. Plant, of Leicester, and *Dorcatoma chrysomelina*, of Sturm, bred from rotten wood brought from Richmond Park, the species not having been previously known as a native of this country.

Mr. Stevens exhibited two specimens of the very rare and handsome Beetle, *Diachromus germanus*, recently found alive in the town of Deal.

Mr. Pelerin exhibited some very fine Coleoptera, including a beautiful variety of the rare *Staphylinus cæsaureus*, having the pubescence entirely fulvous.

Mr. King exhibited a fine series of *Crambus paludellus*, and other Lepidoptera, from Horning Fen, Norfolk.

Mr. Stainton exhibited the living larvæ of *Nemotois scabiosellus*, received from Herr Hofmann, of Ratisbonne.

Mr. Ianson exhibited specimens of *Doriaca comari*, taken in Perthshire, and pointed out the distinguishing characters of this species, which had hitherto been only found in Germany.

Mr. Rye exhibited a specimen of *Aleschra ruficornis*, found by Mr. Solomon, in Compsee Glen, near Glasgow, and a *Bagous*, which he believed to be distinct from all the previously described species of that genus.

The Secretary read a communication from Walter Elliott, Esq., of Wolfelee, Keswick, N.B., on the injury done to Larch and Spruce Firs by *Hylobius abietis*, a large species of Weevil. The writer considering the ravages of this Beetle to be chief cause of the increasing mortality in plantations of those trees.

TO CORRESPONDENTS.

GERANIUMS AND OTHER BEDDERS IN WINTER (E. D. S.).—For bedding plants in general, young plants from cuttings are by far the best. We can offer no easy ready mode for preserving other Geraniums without potting and good treatment. For Scarlet:—Fork them up, shorten the roots if long, remove fully one-half the spongy part of their heads and all the leaves, dust the cut part with lime and charred dust, and pack the roots and an inch or so of the stem into soil neither wet nor dry, give a little water at first, and before frost place them anywhere where the frost will not reach them, and where they will not be too damp.

BUILDING THREE-LIGHT PITS (J. C. C.).—For Melons and Cucumbers it would be best to have two pipes in the middle for bottom heat, and two for top heat, the latter may run along the front, or one in front and one at the back, for this purpose. The pipes for bottom heat should be three feet or three feet six inches below the front wall-plate. This will allow for six inches of clinkers and gravel above the pipes, and eighteen inches of soil, and from fifteen inches from that to the glass. The others may be used for Pines, French Beans, Strawberries, stove plants, or young plants that it is desired to force onwards. Trap or poison rats. There are many modes of doing so. Perhaps we read it wrong, it may be *ants*. Use strong guano water, or even gas water. You will find full information as to general management of Melons, Cucumbers, &c., in recent volumes.

CAPSICUM CULTURE (M. R.).—Sow the Capsicum seed in a hotbed in the beginning of March. Prick off the young plants four in a small pot as soon as one inch and a half in height. Keep them still in the hotbed, in a heat averaging 65°. As soon as the plants are filling the pots, give each plant of the four a pot to itself. When that is filled with roots, repot into a size larger, and then again into a 32-pot. This will be done by July. They will do after this on the shelf of a house averaging from 50° to 65°. During all that time the plants should be watered according to the weather pretty freely. As the fruit begins to ripen in autumn, less water and more sunlight, if possible, should be given. If the plants are to be kept over the winter, which Chili Capsicums frequently are, the heat must range from 50° to 65°, and enough of water, but not so much as to soak them. They may want fumigating for green fly. The best compost is two parts sandy loam, and one of rotten leaf mould.

VENTILATING A FRUIT ROOM (A Subscriber, Croydon).—A trap-door at each end in the top angle of the roof, just below the thatch, will give you the most effective ventilation. The four-inch pipe in the side of the thatch will be useless.

ETHER RESIDUUM.—"B. T." wishes to know where this can be obtained.

VINES FOR EARLY FORCING (An Inquirer).—White.—Dutch Sweetwater, Buckland Sweetwater, Golden Hamburg, Royal Muscadine, White Frontignan, and Bowood Muscat. Black.—Black Hamburg, Muscat Hamburg, Mill Hill Hamburg, Victoria Hamburg, Trentham Black, and Black Champion. As you request, we have mentioned twelve sorts, but most likely it would suit you better to take one of each of the four whites first named, and have Black Hamburgs for the rest. We hope that water will drain through the limestone, and that the flue goes at the front as well as the back of the house, or you may want heat for early forcing.

SOWING HARDY ANNUALS (S. Smith).—You may still sow in the open ground Virginian Stock, Venus' Looking Glass, White Alyssum, Collinsias, Nemophilas, and Candytufts, and if slightly covered with sandy earth, the small plants will generally stand better in winter than if they were larger. Sowing in pots will be a disadvantage, unless you can keep them under glass, and give plenty of air. With such glass we would sow in rows and transplant early in spring. To make doubly sure, we would now fork a border a couple or three inches deep, make it fine, sow all the above, and *Oenotheras*, *Eschscholtzias*, and early-flowering annuals, in rows four inches apart, merely covering the seeds with a little sand, and if the weather was clear, shading before the seedlings appear, and then exposing them. A few evergreen branches stuck among them in frosty weather would keep them. Lift these in patches and place them where you like in March.

GRAPES NOT SETTING (R. W., Muswell Hill).—The roots of your Vines have descended into soil they do not like. After the leaves have fallen and the Vines have gone to rest, uncover the roots carefully, and see whether or not such is the case. If they have spread beyond the border, you must cut off the whole of that part which has reached the stiff clay, or gravel, whichever it may be; renew the soil of your border, or give it a good top dressing, and no doubt you will find your Vines recover.

WINTERING BEDDING PLANTS (Ashton).—As respects Scarlet Geraniums you will see what is said to several other correspondents to-day. The most economical mode as respects space is to lift, shorten the roots, and lessen the tops by one-half, pull off all the leaves, and pack roots and an inch or two of the stems in soil neither wet nor dry. If you can give them room in your greenhouse, you may pot them separately and leave the most of the leaves on. This last would be the best plan with other Geraniums of the bedding fancy kinds. They may be pruned in a little and the larger leaves removed but they will not stand the rough treatment of Scarlets. Without enough light they will soon get sickly. Scarlets having plenty of juice in their stems will manage very well with little light until the fresh shoots come over them. Calceolarias may be denuded of all their flower-stalks, pruned in considerably, and taken up and planted thickly in the soil of your Cucumber-frame, and here with a little protection from frost they will thrive well all the winter. Did you, however, remove some of the soil of your Cucumber-bed from the surface, so as to have it some twenty inches from the glass, mix some sand with it for three inches deep, and cover with a sprinkling of sand patted firm, you might go to your Calceolarias-bed, slip off side-cuttings two inches (less rather than more) in length, take the lower leaves away, and shorten the others considerably, and plant these cuttings firmly over the bed in rows one inch apart and one inch and

a half from row to row. These tiny things will occupy little space in comparison with your plants, and next spring, if well managed, will beat in the flower garden your carefully saved plants. Do much the same with Verbenas, or place little cuttings thickly round the sides of well-drained pots, and water, shade, and give air, as you may learn how in "Window Gardening." We should not like to give a penny for your old plants at Christmas. If you are doubtful of cuttings from want of experience, examine shoots near the ground, and you will perceive many of them putting out incipient roots. Supply yourself with a number of small 60-pots filled with sandy loam and leaf mould, and on the top of the soil fix the little shoot with a peg or pebble, and sever it from the parent plant when there are plenty of roots in the pot. It is late enough for this; and therefore we would contrive to give cuttings a little extra heat in the Cucumber-frame. Calceolarias lift well and thrive when taken from flower-beds, but we like cuttings best—we shall put in thousands in October. Old Verbenas want much care, and are scarcely ever worth the labour. Young plants are the best.

PLANTING GROUND (E. N. N.).—To let any plot lie idle is bad gardening. On your three quarters of an acre where the Potatoes grew, partly plant Cabbages, and partly sow Tares. They will sell if you do not need them. Any crop you require will do well after either Mangold or Carrots.

AUSTRALIAN SEEDS (J. M.).—It would take us a week to identify the genera, much more to identify the species. You had better try them all, giving greenhouse treatment, or send them to some nurseryman and tell him whence they came.

PORTABLE HOUSE SEWAGE (Idem).—The best way to effect this is by soaking in it ashes, earth, and refuse weeds, and then storing these under a shed until required, mixing with the mass a little gypsum (sulphate of lime). We know those who are situated as you are, and they have a large hoghead on wheels, in which they convey the liquid to their land, and distribute it over any vacant plot as often as the tank requires emptying.

NAMES OF FRUITS (T. M., Little Dean).—*Pears*.—1. Williams' Bon Chrétien. 2. White Doyenné. 3. Not known. 4. Marie Louise. 5. Not known, will never be Beurré Rance if it should grow ever so large. We cannot make anything of your Apples, which appear to be local varieties, some of them are only sorts grown for cider.

NAME OF APPLE (T. T. T.).—The Red Astrachan answers to your description.

NAMES OF PLANTS (R. M. G.).—1. Sedum Sieboldii, a beautiful pot plant for a cold frame, and reputedly hardy. 2. Cyanotis vittata, which will grow in a warm, close greenhouse, but is hardly to be expected to do so satisfactorily in a cold one.

POULTRY AND BEE-KEEPER'S CHRONICLE.

EFFECT OF THE SEASON ON FOWLS.

HAD there been such a season as the present one some years ago, there would have been one universal cry and complaint that all the fowls were ropy. We have no hesitation in saying we have at that time seen yards of fowls where there was not a healthy one. Many old amateurs can recollect the apprehension with which the moulting season was viewed, and the dismay with which they saw bird after bird fall off, knowing death would be the end of the attack. Now everything is different: either the malady has lost much of its intensity, or the birds have so improved in constitution they readily shake off that which was formerly fatal. We may thank shows for it. The interest that was excited about fowls by the institution of these friendly rivalries caused the subject to be treated by men who were able to do so scientifically. They were successful. Till they took the subject in hand a suffering fowl was generally given over to the tender mercies of some one who was supposed to know something about them, and then they were tormented with everything that was nauseous in taste and smell and violent in action.

But men of skill and practice in such cases sought for preventives rather than cures, and soon discovered in the careless way in which they were treated and bred the causes of the disorders. Poultry had been thought little of, but it now assumed importance; still more when there came proof that with painstaking those disorders that had been the bane of a yard were not only *not* inseparable from the pursuit, but easy to avoid.

Just as the sanitary condition of a country is improved by adopting some and avoiding other suggestions or discoveries, so a like result has been arrived at in poultry. Foul smells, damp or close atmosphere, irregular or insufficient food, or want of exercise, were found to be as fatal to fowls as to human beings; and the observance of temperance, regularity, &c., more important to health than the largest or best-fitted medicine-chest. We may always be guided very much in the management of our stock by that which is beneficial to ourselves. At the approach of winter we adopt warmer clothing. We gradually change our atmosphere by using fires, and we alter our food. Let us do for our poultry in like manner. Many of our broods have, perhaps, been accustomed to roost out of doors: Get them under better

shelter than that now afforded by the boughs of a tree. The foliage is getting thin, the nights are long and cold, the dews heavy, and premonitory sneezings will tell you an alteration must be made in lodging. We do not say you must put them in houses; but they must roost where they are free from draughts and quite dry, their food must be increased in quantity, and, if necessary, of better quality than hitherto. There is a dearth of poultry, and whether it be for the table or sale, none will find it unprofitable to follow our suggestions.

BLACK-CRESTED WHITE POLANDS.

I HAVE seen "W. R. E.'s" article on Black-crested White Poland in your paper of September the 4th, in which he requests any one who has tried the experiment to communicate the result. Though I have not tried the experiment myself, I happened when staying near Calais, to have met at a French fisherman's two birds (both hens), one of which was of this much-talked-of breed. It was then (about three years ago) very old; the other bird was a dark Dun-crested White Poland. He had bred them by crossing White-crested Dun Poland and some bearded White Poland, which were dark about the crest and beard. These dark-bearded White Poland were bred, I believe, between Buff Poland and irregularly marked Silver-spangled Poland.—AN AMATEUR.

MANAGEMENT OF POULTRY IN AUTUMN.

Now that harvest is over, and my corn and fruit are gathered, housed, and stacked out of harm's way from my ducklings and chickens, I allow them to roam again at their will till the corn fields are resown (after the corn is up they will have their liberty again), and many that were sickly from being obliged to be confined in close quarters in the yard, and sometimes in the fowl-house day and night too, on account of being in the way of harvest operations, and helping themselves too freely with the field and garden produce, are now becoming more healthy and thriving, and are apparently more happy than when they were obliged to be kept out of their natural element.

By constantly training them to roam for their food, and to be fed when and where I pleased, when young, they now, when nearly fully grown, are so docile as to follow me anywhere at my usual call, so that I am now able to entice or to conduct them to any one of my fields at a reasonable distance from home—say a quarter of a mile off the homestead, to be fed, and where they will remain most of the day picking up what food I had strewed all over the field for them, as well as shacking the corn which the gleaners had left, and are immensely more serviceable, and also more lucrative than pigs would have been, and much more trustworthy, and not so mischievous. They are also of great service in clearing off insects of various descriptions.

Chickens are of important service if allowed to roam a few hours in the garden before feeding time, as they are remarkably fond of earwigs and woodlice. The Ducks, however, will not stay so long in the garden or field at one time as the chickens, their instinctive nature being a hankering for the water, where they will have a swim when they please, or they will sulk and fret, and not thrive so well. They are, however, equally bent to leave the pond or brook at short intervals in search of slugs, &c., or to be fed; but they soon waddle back again to the water, and only feeding them at night will entice them to the fowl-house at night. If it were a safe course to pursue, they would prefer to sleep on the water, or in the sedges all night, and it would, no doubt, be more congenial to their growth and health. Not so, however, with chickens, and this causes them to be less troublesome and more lucrative than Ducks, requiring less food; but the worst of it is, they will not gobble slugs with or without shell, and are more delicate in their choice of other accompaniments to eat with their corn.—ABRAHAM HARDY, *Seed Grower and Merchant, Maldon, Essex.*

MANAGEMENT OF PEA FOWLS.

I SEE that "A SUBSCRIBER" asks for advice about the management of Pea Fowls in a limited space. I have many years kept them in enclosed yards, and can give him the desired information.

You are quite right in advising the use of green food; they

will greedily consume lettuce, cabbage, turnip-tops, and almost all garden refuse, and cannot possibly be kept in good health without a supply of such food. They are very fond of the grass mown by a machine, provided it is quite fresh and recently cut. I should advise your subscriber to let his birds have one feed each day of boiled rice mixed with barley flour, this they will relish much better than hard corn; but by all means let them have barley by them to eat a little now and then, but not to be dependant upon it.

I have had Peahens lay as many as fifteen eggs in confinement: these should be placed under large Cochin hens, and not be entrusted to the natural mother. If the young are fed for some time upon eggs boiled hard, curd, and a few crumbs of dry bread, they will be easily reared. A supply of water is always necessary—they are great drinkers.

Your subscriber must not be alarmed because his Peacock's tail does not grow as fast as his vegetable marrows. The tail is never perfect until about the end of January, and in old birds even later. They are six months in *deshabille*.

There are four kinds of Pea Fowl—the Black-winged, the Brown-winged, the Pied, and the White. No birds differ more in disposition than Peacocks: some are quiet, respectable, stay-at-home, affectionate birds; others marauding, screaming, frantic vagabonds.

They ought to have a warm, comfortable roost, with perches as high as possible. My roosts are roofed with glass. If you have any regard for your birds keep them warm; they are Indians by extraction.—R. B., *Radcliffe-on-Trent*.

CHINCHILLA RABBITS—RABBIT-KEEPING.

IF "JEMIMA WILHELMINA," who, I see by your paper of October 2nd, wants some Chinchilla Rabbits, will refer to No. 623 of *The Poultry Chronicle*; she will see some advertised for sale; also Himalayans. Both of the above kinds I have kept and found them the most profitable, both for table purposes and for sale. I am surprised that Rabbit-keeping in England has been so long neglected, when the keeping of poultry has been quite a rage. In France, Poland, Prussia, and Asia, no farm-house or poultry-yard of any pretensions is without a rabbitry.

In France, I know several persons who make handsome incomes by Rabbit-keeping.

I attribute the reason of Rabbit-keeping being neglected, is the want of a good work on the subject. There are several, but not one is of any use. Now, in France there are about six standard works on Rabbit-keeping alone. There is one by M. Despony, "*Le Lapin Domestique*," in which there is some first-rate information, if translated. I regret I am not a French scholar to do so. I am sorry I am not well up in literature to write a few articles in your valuable paper on the subject, which I am sure would be well received by your readers, as the taste for the keeping of Rabbits is increasing very much, judging from the number of queries you have every week.—M. J., *Surrey*.

[If you will send us a series of articles upon Rabbit-keeping, you will greatly oblige us, and we will take care that the literary part is attended to. We are making arrangements for more information concerning Rabbits.—EDS. C. G.]

STICKS IN BEE-HIVES.

YOUR correspondent "H. K. J.," Hampstead, seems to have misinterpreted my meaning in a previous communication under this heading. The expression "common straw hive" I supposed would be sufficient to convey to most apiarians the idea of the usual bell-shaped hive in common use, the material being obviously foreign to the subject. I may mention for his information that such hives generally average fourteen inches diameter by ten deep—the size of the two unfortunate hives therein referred to; also that hives of wood are frequently furnished with supports—the best of the class, the Stewarton, being always so provided, although only six inches deep. Without depreciating the treatises of the two justly reputed apiarians quoted by your correspondent, the "YOUNG BEE-KEEPER" would do well to bear in mind that, generally speaking, authors, in these rapid-book-getting-up days on more subjects than bees, are apt to re-echo in their own phraseology the seemingly feasible theories of preceding writers without bringing them to the test of actual experiment, and that his best teacher is that stern old dame

Experience. When he finds any contrariety exists between her and the rules laid down by his author, the latter must bend to the former, not the former to the latter. From careful observation through the windows of those of my hives furnished with a cross stick, I cannot say that the bees seemed at all annoyed at its presence; on the contrary, from their introduction readily availed themselves of the support it afforded their clustering mass pendant from the combless centre of the hive, and I have no doubt but at such a time they could be conveyed a distance with much less disturbance in consequence. Comb-building subsequently progressed favourably—the bees taking full advantage of the communication thus opened from side to side of the hive, and indeed paced along it, seeming to appreciate the convenience with as much apparent pleasure as southern tourists are at this moment doing the steamer paddle-box gangway when exploring our Scottish lochs and rivers. So much for the annoyance objection.

As to the other—the impossibility of extracting the combs, I do not anticipate any difficulty, but a decided advantage, after the plan I have devised, which permit me to describe. In hives of ordinary depth one support will suffice, which should be of wood half inch square, in length barely the diameter of the hive, so that it can be moved up and down without actually touching the sides; to be secured in its place from the outside with stout brass screws, which should be rather below the centre, and at right angles with the entrance. In a common cottage hive, after the screws have been removed and the combs separated with a comb-knife, the stick will afford a catch in lifting them out. Suppose, however, an improved hive so fitted set aside for plundering, the top, whether in a piece or consisting of a frame of bars and slides, secured in its position with screws, the inmates once expelled, the apiarian, after withdrawing the screws and severing any slight end attachments, can easily raise the top bearing the entire contents and place them reversed on a table before him, and then select and appropriate as much of the sealed tops of the combs (containing the finest honey) as he thinks fit, leaving always at least two combs entire to preserve the support in its position. The lower portion of those cut, in which the brood pollen and unsealed honey are deposited, remain fixed thereto: and then, with the top replaced as before, the bees reintroduced will speedily fill up the blanks.

A still more secure plan I have adopted in some hives is, instead of the support being kept in position as above explained, to secure it by upright pieces of wood of similar square fitted to each end, and secured above by a notch cut out of the outer side of each end bar, forming, as it were, a frame. In this case the whole upper portion of combs can be removed; and the bottom part, usually serviceable only for the melting-pot, retained to good account in the hive.

By some such simple device the apiarian can handle his hives with freedom, and move them to any distance without hazarding their total destruction, with, I should think, very little annoyance to either the bee or the bee-master.—A YOUNG BEE-KEEPER.

OUR LETTER BOX.

SILVER-SPANGLED HAMBURGS AT PORTSEA POULTRY SHOW.—"I beg to correct a mistake in the prize list of the Silver-spangled Hamburg Class at Portsea Poultry Show. My address is, Jas. Newick, Hinton St. George, near Ilminster."

SPANISH CHICKENS AT THE PORTSEA SHOW.—"It was at the Portsmouth Poultry Show that my Spanish chickens were commended, where I did not send them. You have put at the Crystal Palace, which is a mistake."—JOHN R. ROBEARD.

DEVIZES POULTRY SHOW (S.).—If you refer to the list which we publish weekly, you will see that the *entries close on the 13th of the present month*. Why postpone entering until the last day? It is founded on no good reason.

FEEDING BEES (A. B.).—We do not know how better to reply to your inquiry than by referring you to our number for August 28th, page 336. Of course, the quantity of food requisite depends upon the weight of your stocks, and it should be given at once, for feeding by driblets is very unadvisable at this season. It may assist you to recollect that a common straw hive usually weighs when empty from five to six pounds, an ordinary swarm about four pounds, the wax of a full hive of the current year nearly two pounds, of the preceding year about three pounds, and the farina not less than one pound, making altogether about fifteen pounds. To make the stock secure for the winter, there ought to be another fifteen pounds in honey, or some substitute for it, or a total of thirty pounds gross.

HONEY FOR FEEDING BEES.—Messrs. Neighbour & Son, have written to us as follows:—"We had but little conception when addressing you on this subject a few weeks ago, of the demand that would be made upon us for the honey we were enabled to part with, at 45s. per cwt. Will you kindly intimate to your numerous apiarian friends, through THE COTTAGE GARDENER, that the honey referred to is entirely disposed of? The lowest price we now have suitable for the purpose is 52s., and that we have but few cwt. remaining."

WEEKLY CALENDAR:

| Day of M'nth | Day of Week. | OCTOBER 16—22, 1860. | WEATHER NEAR LONDON IN 1859. | | | | Sun Rises. | | Sun Sets. | | Moon Rises and Sets | | Moon's Age. | Clock afterSun | Day of Year. |
|--------------|--------------|--------------------------|------------------------------|-----------|-------|-----------------|------------|--------|-----------|-------|---------------------|-------|-------------|----------------|--------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | | | | |
| 16 | Tu | Arbutus unedo. | 29.490—29.417 | deg. deg. | S.W. | .34 | m. h. | m. h. | m. h. | m. h. | m. h. | m. h. | | m. s. | 290 |
| 17 | W | Hedera helix. | 29.838—29.578 | 64—46 | S.W. | .01 | 28 af 6 | 3 af 5 | 25 5 | 6 6 | 3 | 14 27 | | 14 27 | 291 |
| 18 | Th | St. LUKE. | 29.938—29.892 | 56—41 | E. | — | 30 6 | 1 5 | 6 6 | 4 | 14 50 | | | 14 50 | 292 |
| 19 | F | Hen chaffinches flock. | 29.916—29.753 | 58—41 | W. | .03 | 32 6 | iv | 59 6 | 5 8 | 5 | 15 1 | | 15 1 | 293 |
| 20 | S | Coddy-moddy gull inland. | 29.588—29.294 | 59—40 | W. | .06 | 33 6 | 57 4 | 5 8 | 6 | 15 11 | | | 15 11 | 294 |
| 21 | SUN | 20 SUNDAY AFTER TRINITY. | 29.304—29.282 | 60—35 | N. | — | 35 6 | 55 4 | 17 9 | 6 | 15 20 | | | 15 20 | 295 |
| 22 | M | Sun's declin. 11° 15's. | 29.481—29.438 | 45—23 | N.W. | — | 37 6 | 53 4 | 31 10 | 8 | 15 29 | | | 15 29 | 296 |
| | | | | 53—21 | | | 39 6 | 51 4 | 44 11 | | | | | | |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 58.6° and 41.2° respectively. The greatest heat, 73°, occurred on the 21st, in 1830; and the lowest cold, 20°, on the 21st, in 1842. During the period 126 days were fine, and on 105 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

ADVANTAGE should be taken of fine weather for digging and trenching ground. *Cardoons*, tie up for blanching when the leaves are quite dry; haybands to be twisted round them that the earth may not come in contact with the leaves when earthed up. *Cabbages*, fill up all vacant places in the ground with them: they may now be planted very close in the row, and the rows about eighteen inches apart. *Carrots*, take them up as soon as the leaves change; for if they are allowed to remain too long in the ground they are apt to get grub-eaten, especially in rich soils. *Celery*, take advantage of fine weather to earth it up; keep the whole of the leaves together. *Chives* should be taken up, and replanted every two or three years. *Garlic*, plant in a dry and rich soil in shallow drills, merely to fasten the roots in the ground, nine inches from drill to drill and about four inches apart in the drill. *Onions*, look over those that were gathered in last month, and clean them thoroughly; in doing so handle them gently. *Pot herbs*, fill up and dress the beds for the winter. *Horseradish*, dig up and replant, reserving all the finest for winter use. It will keep fresh packed in sand. *Small Salad*, keep up a succession by sowing in boxes, and placing them in a gentle heat.

FRUIT GARDEN.

Prepare for planting all sorts of fruit trees when the leaves drop. The ground to be drained and trenched, and where the natural soil is not so good as could be wished, provide that which is proper to fill in around the roots at the time of planting. Cut out the dead wood from Raspberry stools, and tie the young canes to the stakes, to prevent injury from high winds. Strawberry plants not yet potted to be delayed no longer; when potted to be placed under some temporary shelter, to protect them from heavy rains and frost.

FLOWER GARDEN.

The Scarlet and Variegated varieties of Geraniums, and any other choice plants worth saving, and still in the open ground, to be taken up and potted; they will be useful for another season where there is room to keep them through the winter. The beds to be dug, and if the whole of the surface cannot be covered with bulbs, a few planted around the outsides, with a tasteful arrangement of colours, will give a pleasing effect to the outlines of the beds. The beds, if sown with Californian and other hardy annuals, will be gay in the months of May and June. The following are recommended for the purpose:—*Nemophila insignis*, *Clarkia pulchella*, *Silene pendula*, *Leptosiphon densiflora*, *Collinsia bicolor*, *Erysimum Peroffskianum*, *Eschscholtzia crocea*, and *Iberis coronaria*. *Dahlia* roots to be taken up, and placed in a shed to dry for a few days before they are cut down; when cut down to be placed bottom upwards, to allow the sap to drain away from the portion of the stems that is allowed to remain attached to the roots. Perennials,

if not already parted, to be now looked to; if the mass is getting too large, or an increase of stock is wanted cut off portions with the spade on the side they can be best spared, and plant the detached pieces where they are most wanted. The main beds of Tulips may now be planted whilst the weather is fine and dry. Preparations should be made to receive Roses, which may be transplanted with safety towards the end of the month. Hardy creepers to be examined, and all unnecessary spray to be removed, and their security from the blasts of winter insured.

STOVE, PITS AND FRAMES.

The same as last week.

GREENHOUSE AND CONSERVATORY.

Continue to pick off all dead and decaying flowers; to stop all luxuriant shoots in due time; to keep down mildew, and all kinds of insects; to apply water with care and moderation, as many plants are now requiring rest. A gentle fire heat, when required, to be given in the afternoons, and allowed to die out gradually towards night. Water to be given in the forepart of the day, that all superfluous dampness may be dried up before night. Fuchsias require to be kept rather dry when the flowering is over. When they lose most of their leaves they may be then set aside in any corner free from frost during the winter. Let the Pelargoniums have an abundance of air, and to sink gradually down into a comparatively dormant state, limiting the supply of water in proportion to the decrease of light. W. KEANE.

PAMPAS GRASS—BEGONIAS AND TACSONIAS.

It would be interesting to register again the dimensions and number of spikes on the *Pampas Grass*, and to note the difference of the influence of the two last extreme summers on it. It is finer now on the grass at the Experimental than it has been yet, and nothing was done to it from first to last. Cooking is bad for it, certain—I mean high feeding with all manner of rich things: hundreds of it which were thus pampassed for the last three summers have been killed round London last winter, while our plants of it have hardly lost a whole leaf; only parts of the tops of the outer leaves suffered. We have not had so many spikes as are spoken of elsewhere, and now we can only tell a few over forty spikes on the best plant; but the healthy looks of the Grass the whole year through make up for the difference. I wished to bathe it twice a-week with brown stout from the byre, or cowhouse, from May to September from the first, but the owner of the garden will not allow unsanitary measures in sight of the mansion; and now I see the difference, and will never recommend a friend to pamper a *Pampas Grass* again. All extra feeding tends to make tenderish plants more tender, and more liable to be frost-bitten.

Now is the right time to look about and select the best varieties of *Pampas Grass*; there are many degrees of fineness among them, and different tints, without adopting the theory of male and female kinds. After one is

tired of seeing it yield to the season, there is one particular use to which it could be put to please the boys—and that is, to cut the spikes and to let them dry in-doors till about Christmas, and then give them to the boys to play at volunteers with. Without tarring an enemy, they can feather him from top to toe, and the feathers will stick to every part of his dress better than if it were first smeared with tar. The time it takes to clear an army from the effects of a right Pampas battle will be sufficient to prevent invasion altogether. But let the boys prove the fact.

The next plant in season is *Tritoma uvaria*. This was lost too in some places by the frost of last winter, and this season has given it no strength at all; not but that it has grown as well as usual, if not longer, but a South African like it will never make bone and muscle, according to the weight of flesh, without much sunshine: therefore, see to having it provided with some slight covering from the frost till it comes round again. Every one of the seeds I had made nice little plants with the same treatment as an ordinary cold-frame plant; but of course none of them did bloom, and who could expect it? There were fifty seeds in the packets, and mine made sixty-two plants, so I had a few extra seeds. The seedlings were planted out at the end of May, and now they are of the size of Wheat plants when the sheath folds for the coming of the ear. Then you can judge your luck with them. Mine will be taken up as soon as the frost tells on the leaves. The whole sixty will be put into two large pots full of the cocoa-nut refuse, and placed down in the cellar till the end of February; but, of course, they will be often looked at, and if the place seems too mild for them, and they show the least symptom of growing again, they must be removed to a colder place. I shall also mulch over the old plants with cinder ashes, enough to keep the frost from crusting the earth, all round and over them.

At the Experimental Garden *Farfugium grande* is not to be left out this winter, the slugs being more hurt to it than frost; and as it will live dormant without the leaves the whole winter without harming it in the least, it will be taken up, and put in by the heels, as we say, in some cool corner—probably under the stages in the greenhouse. At the end of March it will be set to work, and early in May it will be turned out of doors for fancy decorations of sorts.

Talking about fancy furnishing after the regular beds are filled in May, why half the best of the gardening of the country has been done in that style for years and years. Every movement out of the regular routine of an age of gardening is a fancy way. Some of the fancies are and have been most ridiculous, and some very superior to the notions then prevailing on the matter of filling one's extra borders, and out of the common capabilities of his situation. And some of our best hits in gardening, both in planting and raising stock, have had their origin in fancy decoration, which decoration embraced every degree and every point from the bottom of the scale up to blood heat at one time or another. Some do not like fancy things, or things out of the common run, and others think them the pink of perfection. And after all is said, every one of us has some fancy of his own in planting different from the rest: therefore, I never knew any strange or fancy thing to fail in gardening from the first day till now.

The last fancy will certainly never fail, for it is founded on the philosophy of our common nature, but it will bear repetition. "We lately recommended a young lady to plant Crocuses in the lover's knot style; and she told us the effect was charming." Of course it was—I never knew it otherwise. But did you ever hear such a fancy way of planting as this of the Messrs. Carter & Co., of High Holborn? Depend upon it, their "Vade Mecum" will reach from pole to pole for that very fancy. Young ladies, lover's knots, sound bulbs, and deep rich sandy

loam, would make a paradise of a desert. (See COTTAGE GARDENER, page 19.)

You recollect there was a lover's knot in the lady's-locket way of planting that design at Kew this last planting. So you see, from the highest to the most favoured, that knot is a talisman over all the tales in creation. But my fancy to-day must take a more unambitious turn. It is to try to keep the planted-out *Begonias with fancy leaves* on the same model as *Farfugium grande*—that is to say, in a dormant state from October to late in the spring; and why not? *Farfugium* was bright and shining the whole winter; but that made no addition to its strength or beauty when planted out of doors, but the contrary. All the *Rexes* and double *X's*, the *nebulus* and *nebulosus*, the *Miriams* and *Mirandas*, and all up to frosted and snowflake-like leaves in *Begonias*, must be humoured into the condition under which *Farfugium grande* rested from its labours from the 17th October, 1859, to May day, 1860, and yet did more work for the last six months than any other thing in its way, short of a lover's knot. And why not *Begonias*? But will they keep dry or half dry in the balls they take up with them, through the whole winter? No, they will not, take my word for it. If you put them under hatches in their native warmth under the stages of an Orchid-house, or other plant-stove, that stimulus would cause them to make fresh leaves in less than a month; and if there is but one leaf there is no rest, after the manner of this fancy.

Then, the question is two-sided. At what degree of temperature will these fancy-leaved *Begonias* cease to make actual growth in winter, that would be a safe—the safer degree to rest them at? The other side of the question is, Which is the lowest figure at which the roots and rootstock of such *Begonias* can be kept during the winter without shrivelling up or dying off with sheer cold?

This last degree is yet a problem in gardening to be proved. We in the Experimental mean to solve this last point this winter. The kinds which are yet out in the borders there, and which have done remarkably well notwithstanding the cold, wet summer, will be taken up with balls of earth about the roots, the leaves will be cut off, and the balls will be planted in cocoa-nut refuse, which is of the consistence of sawdust, just under or very near the hot-water pipes in a common greenhouse, along with *Farfugium grande*, from which the leaves will also be cut. The condition of being neither wet nor dry the whole winter will be the rule for these "roots."

Those who have hothouses of different temperatures, and old blocks of *Begonias* to spare for the experiment, ought to assist in the inquiry by trying for that degree of warmth which will preserve the plants from growing for some months. No matter if the plants have not been out of doors like ours, the experiment will pay its cost for in-door work just as much as for fancy planting, as very old or very large specimens could thus be kept over the winter at no cost of room or labour; and in the summer they would come in very handy to fill the show-house with such magnificent specimens as would be very difficult to obtain in any other way.

There is no doubt about *Begonias* being used in the flower garden in various ways; but it is only in rock and rustic work that they will tell best. The exotic flora of the flower garden is about as pleasant a thing as one could hit upon, and nothing of an out-of-the-way-look will ever come amiss in this department. Then, if we can manage to keep them like so many old cut-down *Geraniums* in winter, thousands would soon have them who have now no idea of their looks or nature.

Writing about flowers takes various turns, like all this variety and variation in the leaves of *Begonias*. For instance: Three or four or five years back, a new half-hardy climber was introduced into the London trade from the Continent, I believe, but no one in the upper crust of botany could tell aught about it. Nothing of the sort having ever entered their books, it must have

been the work of the seedmongers, perhaps of cross-breeders; but who could tell the thing would not and could not be made to bloom anyhow? That plant is *Tacsonia ignea* of nursery catalogues. It has flowered at last this summer, in the large house, the winter garden, of the Messrs. Rolleston, at Tooting, where it continued in bloom for two months, and from which I heard of it only by chance. A good practical gardener who had seen it, however, told me it was a capital plant, and belongs to the second section of *Tacsonias*—that without a tube to the flower, like *manicata*. That was all I could learn of it. My informant had never seen *manicata* in bloom, and very few gardeners have yet seen it in that condition, strange as it may sound: therefore, he could not compare it with its like to me, or say which of the two was the best, or whether they are both best, but from his description I can infer it to be a seedling from *manicata*.

Ten years since, my successor at Shrubland Park had the three *Tacsonias* in bloom out on a conservatory-wall about the end of this month, all inarched on *Tacsonia mollissima*; and anywhere the three would bloom just as freely as the common blue Passion-Flower if they were done the right way. Their nature is quite different from the Passion-Flowers in common use, but there are three sections of the family of Passionworts besides *Tacsonias*, which have the very nature of *Tacsonias*, and all these will never bloom, with the exception of *Tacsonia mollissima*, if the place is three degrees warmer than their nature requires. They are so excitable as to run to wilding growth at the least extra to their own free upland climate in the next zone above the region of the Passion-Flowers proper. *Mollissima* will bloom freely in-doors or out of doors in a temperature ranging from 40° to 60°. *Pinnatistipula* will not bear with impunity a degree above 48° or 50° in-doors. The red spider can hardly be kept from it in a light, airy house, and none of them are fit subjects for pot culture, so as to be able to move them from house to house, or from under glass to open wall. *Manicata* is as free from insects, under all conditions, as *mollissima*; but, like *pinnatistipula*, the least extra heat sets it off a-growing any month in the year, and it never blooms but in a low temperature, under 50° in a clear house; but out in the open air it blooms just as freely as *pinnatistipula*, and both bloom quite as freely there as *mollissima* does in-doors. What they all want, after out-of-door growth, and while making their summer growth, is exemption from all kinds and modes of pruning or stopping. The stopping of a small side-shoot of *manicata* in July, or if one gets broken by poking its point between the trellis and the wall, the plant will not bloom that season, or not till very late in the autumn.

Pomologists believe that there is a point at which the breast-wood shoots of luxuriant Pear trees trained would "break their heart," or their pride, or their overplus of strength, and become fruitful, provided always there was a headway found for their spread; but no such idea has ever run in a practical head which understood *Tacsonias* in reference to them. You might run them round the Crystal Palace four times, and yet be as far from their limit as the poles are asunder, if the heat is a few degrees above 50°; and yet in the open air 90° of day heat, and if from 60° to 70° at night, are not one degree too many for them. They are neither to be subdued, like most plants, by a stint of water at the roots, during the height of their growth—that will only make them an easier prey for the spider.

Bearing these simple facts in mind, I wish I could excite some of our younger spirits to the successful blooming of these most beautiful climbers. *Manicata* and *ignea* being the best or richest in bloom, *mollissima* the best stock to graft or inarch them upon. Worked plants of them bloom more easily than on their own roots, and *pinnatistipula* is the most liable to the spider. There is no way so good for them as the old plan of planting next the ends or front of a house, to be wintered in the lowest temperature

for Heaths, and to be taken outside in May for training and blooming in the open air till Christmas, if we had no more than 5° of frost, which never hurt them if they are in that position.

Some years since I offered a donkey for a cross of Unique Geranium of a particular stamp. Mr. Judd, of Althorp Park Gardens, fairly won the beast; but he refused to take it. I suppose he thought it too slow for the times. Well, *Tacsonias* are too fast; and the first who will show me in bloom *manicata* and this *ignea*, which bloomed at Tooting last June, shall have the donkey, and a ride to the pinnacle of fame too on my winged Pegasus.

D. BEATON.

CYPRIPEDIUMS.

MR. APPLEBY would oblige if, in addition to his valuable papers on "Hardy Orchideous Plants," he would state where they can be procured. I want the following *Cypripediums* and cannot get them anywhere:—*Cypripedium candidum*, *C. guttatum*, *C. purpuratum*, *C. ventricosum*. I have also on my list, but not named by Mr. Appleby, *C. album* (perhaps *candidum*), *C. Atsmori*, *C. humile* (perhaps *acaule*). I had, this last summer, *C. spectabile*, with seven blooming stems and two flowers on each of four of the stems. Would that be thought a good plant?—A. R.

[I fear our correspondent will not be able to procure any of the above *Cypripediums* in this country. *Cypripedium Atsmori* and *C. guttatum* seven years ago were cultivated in the Belgian gardens, and in Van Houtte's nursery at Ghent. Probably they are there yet, and if so, might be easily got from thence. At the same time the others might be inquired for. *C. Atsmori* is a native of Japan, and was introduced by Dr. Van Siebold in 1830, to Belgium. The *C. guttatum* is a native of Siberia and North America.

The plant of *Cypripedium spectabile* that our correspondent flowered last summer with seven flower-stems, four of which had two flowers on each of them, he may consider as a good specimen, though I have seen a plant with upwards of a dozen flower-stems, bearing in the aggregate more than twenty blooms. *C. album* is a variety of *C. spectabile*, and *C. humile* is *C. acaule*, and not a distinct species.

As hardy Orchids may, probably, be now in demand, any of our nurserymen that possess plants of them, should both advertise them and put them in their catalogues.—T. APPLEBY.]

BROMBOROUGH POOL WORKS' HORTICULTURAL SOCIETY.

THIS is a Society, now in its sixth year, established for the purpose of encouraging a love of gardening, and, as a consequence, a love of home and a good supply of wholesome vegetables, among the workmen of a private company. That company is known as "Price's Candle Manufactory," and the Bromborough Pool Works have been established near Birkenhead for the preparation of some part of their candle-making materials. Some years since we had to eulogise the efforts made by Mr. Wilson, the Company's indefatigable and right-minded, and right-hearted manager, to foster a love of gardening, cricket, and other beneficial employments of their leisure, among the boys and men at the Lambeth manufactory; and to the same mind and heart the Bromborough Pool Horticultural Society owes its birth.

We enter fully into details concerning it because we believe that many masters of manufactories, and many incumbents of country parishes, will gladly make an effort in the same direction when they see the beneficial results and the steps to be taken for attaining them.

The Society is managed by a Committee of nine of the workmen. They have two shows annually; one in June and one in August.

"The subscription is 2s. per annum, or 6d. quarterly, for men employed in the factory; and 1s. per annum for boys. These subscriptions must be paid for the whole year. They will admit to competition in all the classes, and will entitle the subscriber and two friends to free admission at each show.

"The articles for exhibition must be sent to the show-room in the boxes and baskets provided by the Committee, and not

later than a quarter to two o'clock on the show-day. Each exhibitor will have a ticket given him for each article that he brings. These tickets he must take care to place conspicuously and securely on his exhibits. After the Judges have awarded the prizes, all parties will be admitted to the show-room. Those who do not hold free tickets will be charged 1s. each during the first hour of admission, and 6d. each afterwards.

"All articles shown for competition must have been grown on the ground of the exhibitor, or have been in his possession for two months at least previous to the show. The Committee may require proof of this if they see fit. Any attempt to break or evade this rule will be followed by exclusion from the Society, and forfeiture of all prizes, if any have been awarded.

"Exhibitors may take more than one prize in any class of vegetables, &c., which is unlimited as to the species to be shown; provided that the articles sent in by them are approved as being of different kinds. If more than one exhibit is sent in by any one person in competition for the same prize, the name of each kind must be given by the exhibitor on a card or paper attached to the basket. If the Judges find such names to be incorrectly given, the articles will be liable to be put out of competition.

"The Judges may award extra prizes to those exhibits which they think really deserving of such distinction.

"No roots must be washed before exhibition, except those which go to make up the boxes of mixed vegetables.

"Baskets and boxes must be applied for not later than the night previous to the show.

"All articles not admissible for competition must be ticketed 'Not for Competition.' It is particularly requested that this be attended to, as the omission might deprive a subscriber of a prize to which he had been justly entitled. The Judges will be requested to attach to such articles as are not for competition, but which would be entitled by their quality to a prize, a ticket marked 'Best.'

On the 25th of last August a show took place. There were twenty classes, and for the most part three prizes in each (3s., 2s., and 1s.); but in some there were four prizes, the highest being 5s.; but in the 20th Class, for "a box of mixed vegetables," the prizes were 10s., 7s., 4s., and 2s. The articles for which prizes were offered were, Potatoes, Carrots, Parsnips, Onions, Eschalots, Turnips, Cabbages, Cauliflowers, and Broccoli, Peas, Runner Beans, Dwarf Kidney Beans, Celery, Basket of Salad, Red Cabbage, Vegetable Marrows, Mangolds, Swedish Turnips, and Nosegays. There were also four special prizes, varying from 7s. to 3s., for "the best and largest produce of Potatoes from thirty-six square feet of ground."

"The Potatoes must be dug from the ordinary plots. Potatoes planted in six-feet-square beds will not be admissible. The surface will be measured (in the case of Potatoes planted in rows), by taking such a length of one, two, or more rows, as will, with the distance from row to row, make up thirty-six square feet. In the case of Potatoes planted in 'butts,' the width of the alley on one side will be added to the width of the 'butt,' in calculating the space occupied by the plants.

"The Judges recommend that the nosegays sent in for competition should be kept much smaller; they should be such nosegays, in fact, as a lady would carry in her hand. A few really good flowers tastefully put together will be much better than a large bunch containing many common and some imperfect flowers. In order to guide competitors in the sizes of their nosegays, the Committee will, on application, provide zinc holders for these flowers, and no more must be put together than will suffice to fill one of these holders."

To render the competition for the special prize for Potatoes as productive of useful results as possible, the Committee required each exhibitor to append answers and statements to the following heads of particulars and queries:—

"Particulars relating to a crop of produced from a surface of ground containing 36 square feet, under the tenancy and cultivation of.....the Exhibitor.

Variety grown.

Nature of soil.

Kind of manure used.

Quantity of manure per statute rod of 16½ feet square, or per statute acre.

Weight of crop:—

| | |
|---------------------------------|------|
| Sound and perfect | lbs. |
| Injured | lbs. |
| Too small for general use | lbs. |
| Diseased | lbs. |

Total lbs.

Date of crop being planted or sown.

Date of crop being taken up.

If the crop be Potatoes, the following additional particulars are required:—

Were the tubers planted whole or cut?

Were large tubers or small ones specially chosen for planting, or were large and small planted indiscriminately?

Were the sets dibbled in, or were they planted in drills or furrows?

The distance from row to row?

The distance from set to set in the row?

Was any special plan adopted with a view to the prevention of disease? If so, state the plan, and your opinion as to its result."

The particulars and answers so obtained in the years 1858, 1859, and 1860, enabled Mr. Wilson to arrange the following general tables of results:—

First, with respect to the total yield in tons per acre.

The average yield per acre was—

| | |
|---------------|----------|
| In 1858 | 12½ tons |
| 1859 | 10½ " |
| 1860 | 10½ " |

The greater prevalence of Potato disease this year does not therefore, appear to have resulted from an unnaturally forced growth of the plant by excess of manure or otherwise.

The different kinds of Potatoes yielded as follows of all kinds—

| Table 1. | York Regent. | Lincoln Red. | Kemp. | Pink Eye. | Radical. | Fluke. | Arrowsmith's Seedling. |
|----------|-----------------|-----------------|-------|--------------|----------|--------|---------------------------|
| 1858 ... | 18 | 12 | ... | 9½ | 9½ | 11 | 7 |
| 1859 ... | 12½ | 10 | 10 | 10½ | 11½ | 9 | 7 |
| 1860 ... | 12½ | " | 9½ | " | 9 | 9 | 10 |
| Mean. | 14½ | 11 | 10 | 10 | 10 | 9½ | 8½ |

If we regard the results obtained from the York Regent in 1858 and the Arrowsmith's Seedling in 1859—both of which were from only one piece—as exceptional results, the remaining trials probably show fairly the cropping capabilities of the several kinds of Potatoes.

The spaces allowed for each Potato plant by the several cultivators being very different, the results are next classified according to these spaces. An area of from 200 to 240 inches being about the mean allowance by our gardeners, such areas are classed together as "medium." Areas less than 200 inches are classed as "small;" and areas above 240 inches as "large." The following table gives the result of this classification.

| Table 2. | Small. Under 200 inches. | Medium. 200 to 240 inches. | Large. Over 240 inches. |
|-----------|-----------------------------|-------------------------------|----------------------------|
| 1858..... | 14½ | 12 | 12 |
| 1859..... | 11½ | 11½ | 9½ |
| 1860..... | " | 10½ | 10½ |
| Mean. | 13 | 11½ | 10½ |

It is desirable to compare with this table another showing both the number of sets required to plant an acre of ground with a given allowance for each plant, and also the weight of the Potato tubers used for sets. It is found on trial that Potatoes weighing about 1½ oz. each are such as are usually planted in this neighbourhood.

These results are shown in the next table—

| Table 3. | Small spaces. | | Medium spaces. | | Large spaces. | |
|-----------|--------------------------|-------------------|--------------------------|-------------------|--------------------------|-------------------|
| | No. of sets per acre. | Weight in cwt. | No. of sets per acre. | Weight in cwt. | No. of sets per acre. | Weight in cwt. |
| 1858..... | 46,122 | 38½ | 28,008 | 23½ | 20,432 | 17 |
| 1859..... | 37,667 | 31½ | 28,003 | 23½ | 21,780 | 18½ |
| 1860..... | " | " | 27,755 | 23½ | 22,165 | 18½ |
| Mean. | 41,894 | 35 | 27,920 | 23½ | 21,459 | 18 |

Reference must be made to these two tables after obtaining some other results.

The results may be classified according to the dates at which the pieces were planted. If we call those pieces planted before April 1 "early" planted, those between April 1 and April 15 "medium" planted, and those later than April 15 "late" planted, we obtain the following table—

| Table 4. | Early Planted. | Medium Planted. | Late Planted. |
|------------|----------------|-----------------|---------------|
| 1858 | 13½ | 12½ | 11½ |
| 1859 | 9½ | 9½ | 12 |
| 1860 | 11 | 9 | 10½ |
| Mean. | 11½ | 10½ | 11½ |

The year 1858 shows that in both methods of planting better results were obtained from pieces planted early than from pieces planted late. In 1859 and 1860 the early and late planting both succeeded better than the medium planting. I can only attribute this to the state of the weather at the times of planting, but am not at the moment in possession of the data whence to show the kind of weather at the various periods.

It does not appear that any reliable result can be obtained from a classification of "total produce" according to the kinds of manure used, as the quantity of manure would probably have even a greater influence upon the amount of crop than the kind of manure.

The above results have reference only to the total produce of all kinds per acre; but the following tables give the proportionate produce in each case of good serviceable tubers.

Yield per cent. of good tubers, average—

| | |
|---------------|-----|
| In 1858 | 85½ |
| 1859 | 83 |
| 1860 | 67½ |

As there was such a marked decrease in the proportion of good tubers this year (1860), it will be necessary to calculate the mean yields from the results in 1858 and 1859 only, and to separate the results obtained in 1860.

The various kinds of Potatoes gave the following per centages of good tubers:—

| Table 5. | York Regent. | Lincoln Red. | Kemp. | Pink Eye. | Radical. | Fluke. | Arrowsmith's Seedling. |
|----------|--------------|--------------|-------|-----------|----------|--------|------------------------|
| 1858 ... | 80 | 87 | 87 | 98 | 82 | 86½ | 85 |
| 1859 ... | 88½ | 75½ | 87 | 86 | 82 | 87 | 85 |
| Mean. | 84½ | 81 | 87 | 92 | 82 | 86¾ | 85 |
| 1860 ... | 41 | ... | 40½ | ... | 32 | 68½ | 76½ |

The small yield of the York Regent in 1858 may be traced to the fact that there was an extraordinarily large total crop, and that consequently many of the tubers which had formed had not come to maturity. The large yield of the Pink Eye in the same year will be seen on reference to table 1 to have been obtained from a small total crop. Both of these results were solitary ones. Withdrawing these two results, and comparing table 5 with table 1, we obtain the following amounts as the actual yield of good tubers per acre of the various kinds of Potato tried—

| | |
|-------------------|-------------------|
| York Regent | 11. tons per acre |
| Lincoln Red | 8.9 " " |
| Kemp | 8.7 " " |
| Pink Eye | 8.6 " " |
| Radical | 8.2 " " |
| Fluke | 8.5 " " |

As there were many pieces planted with York Regents in 1859, the excellent crops shown above to have been obtained from this kind of Potato can hardly be regarded as unusual or special results. It would appear to be decidedly superior to the other kinds examined.

But in the 1860 results there is a noticeable difference in the resistance to disease of the several kinds. The two flat Potatoes (Fluke and Arrowsmith's Seedling), give decidedly better results than the round kinds.

The per centages of good tubers classified according to the spaces occupied by the plants give the next table.

| Table 6. | Small. Under 200 inches. | Medium. 200 to 240 inches. | Large. Over 240 inches. |
|------------|-----------------------------|-------------------------------|----------------------------|
| 1858 | 82 | 87½ | 85½ |
| 1859 | 76 | 85½ | 84½ |
| Mean. | 79 | 86½ | 85 |
| 1860 | ... | 64½ | 60½ |

These results seem to show that there is no gain arising from increasing the spaces occupied by the several plants to more than 240 inches. There is no increased proportion of good tubers; and on reference to table 2 it will be seen that there is a less total yield from the large than from the medium spaces.

From a comparison of tables 6, 2, and 3, we obtain this conclusion—that taking in each case the per centage yield of good tubers, and deducting from this the weight of the Potatoes used for planting, the clear profitable produce has been as follows:—

| | |
|-------------------------------|-------------------|
| From "Small space" pieces ... | 8.5 tons per acre |
| "Medium space" pieces ... | 8.3 " " |
| "Large space" pieces ... | 7.8 " " |

Taking into account the much greater amount of labour required in planting, cleaning, and gathering the crop from the closely planted pieces, it would appear that the medium planting would be found the most profitable.

Classifying the results according to the times of planting indicated as before, the per centage yield of good Potatoes appears as under—

| Table 7. | Early Planted. | Medium Planted. | Late Planted. |
|------------|----------------|-----------------|---------------|
| 1858 | 83 | 86½ | 91½ |
| 1859 | 81½ | 80½ | 85 |
| Mean. | 82½ | 83½ | 88 |
| 1860 | 59 | 69½ | 59 |

Comparing this table with No. 4, there appears a marked though not a great preference to be given to the late planting over the early planting. As this is quite contrary to the practice of the best growers near London, it is possibly attributable to the prevalence here of cold strong winds from the north-west during the early spring, and is to be regarded as a purely local result.

The following is the table of results for the present year. Those of 1858 and 1859 are similar in form:—

| Name of Exhibitor. | Kind of Potato grown. | Date of Planting. | Kind of Manure used. | Tons of Manure per Acre. | Distance in Inches. Row to Row. | Set to Set. | Square inches allowed to each Set. | Total Produce in pounds from Piece tried. | Calculated Produce per Acre in tons. | Proportionate Produce. | | | |
|---------------------|-----------------------------|-------------------|----------------------|--------------------------|------------------------------------|-------------|------------------------------------|---|--------------------------------------|------------------------|---------------------|-----------|---------------------|
| | | | | | | | | | | In pounds. | | Per cent. | |
| | | | | | | | | | | Good. | Small and Diseased. | Good. | Small and Diseased. |
| J. Clark | White Rock | March | Pig Manure | 20 | 24 | 12 | 288 | 40½ | 21 | 25½ | 15 | 63 | 37 |
| H. Boyce | York Regent | April 25 ... | Pig Manure | 15 | 24 | 12 | 288 | 27½ | 14 | 12½ | 15 | 45 | 55 |
| W. Mace | White Kemp | April 25 ... | None | " | 18 | 12 | 216 | 23½ | 12½ | 10½ | 12½ | 46 | 54 |
| T. Eldridge | Arrowsmith's Seedling | May | None | " | 18 | 12 | 216 | 22½ | 12 | 10 | 4 | 81 | 19 |
| S. Warbush | White Kemp | April 25 ... | Pig Manure | 10 | 24 | 12 | 288 | 20½ | 11 | 6½ | 3½ | 31 | 69 |
| P. Ellis | Fluke | April 25 ... | Night Soil | " | 20 | 12 | 240 | 20½ | 10 | 17 | 5 | 84 | 16 |
| W. Duffin | Arrowsmith's Seedling | March | Bone Dust | " | 24 | 12 | 288 | 19½ | 10 | 14 | 7 | 72 | 28 |
| W. Mace | York Regent | April 25 ... | None | " | 24 | 12 | 288 | 19½ | 10 | 12½ | 12 | 64 | 36 |
| A. McGuinness | Fluke | April | Pig Manure | " | 18 | 10 | 216 | 17½ | 9 | 11½ | 12 | 37 | 63 |
| J. Matthews | White Kemp | March 25 ... | Pig Manure | " | 18 | 12 | 216 | 18 | 9 | 11 | 6 | 65 | 35 |
| W. Cuthill | Arrowsmith's Seedling | April | Stable Manure | " | 24 | 12 | 288 | 18 | 9 | 6½ | 7 | 61 | 39 |
| J. Hopper | Radical | April 25 ... | Bone Dust | 3-4 | 21 | 12 | 252 | 17 | 9 | 15 | 11½ | 36 | 64 |
| J. Tooley | Fluke | March | Night Soil | 15 | 24 | 12 | 288 | 17 | 9 | 5½ | 11½ | 32 | 68 |
| W. Duffin | South Down | April 16 ... | Bone Dust | 1-3 | 24 | 12 | 240 | 16½ | 8 | 12½ | 4 | 75 | 25 |
| G. Fowler | Early Shaw | April 15 ... | Guano | " | 24 | 12 | 288 | 15½ | 8 | 13½ | 2 | 87 | 13 |
| J. H. Day | Arrowsmith's Seedling | April 16 ... | Guano | 1-3 | 24 | 12 | 288 | 14½ | 7 | 10 | 2½ | 83 | 17 |
| G. Fowler | Fluke | March | Guano | " | 24 | 12 | 288 | 13½ | 7 | 10 | 3 | 78 | 22 |
| W. Cuthill | Arrowsmith's Seedling | April 22 ... | Stable Manure | 1-10 | 24 | 12 | 288 | 12½ | 6 | 5½ | 6 | 55 | 42 |
| W. Dawson | Cumberland Kemp | April 22 ... | Stable Manure | " | 24 | 12 | 288 | 11½ | 6 | 5 | 6 | 48 | 52 |

Results obtained from Plots of Ground of Thirty-six square Feet each. 1860.

POTATO CULTIVATION.

It has become the custom for the Committee at the commencement of the season to direct the attention of their fellow members to those points, in connection with the working of the Society, which seem most worthy of notice. These points in 1860 were the following:—

"It would be very desirable to give more attention to the cultivation of the Onion, Carrot, and Parsnip—vegetables which, in respect of utility, come second only to the Potato. To aid in this matter as much as possible, the Committee have proposed the three special prizes to be awarded in June. It has, perhaps, been scarcely sufficiently noticed that two of these vegetables (and probably the third) will yield larger quantities of produce than the Potato from equal surfaces of ground. Thus the average weights of produce obtained from 36 square feet of ground at Hitcham were, in 1858—

| | |
|----------------|-----------------------|
| Potatoes | 22 $\frac{3}{4}$ lbs. |
| Onions | 38 " |
| Carrots | 38 $\frac{1}{2}$ " |

Taking into account the uncertainty which always hangs over the result of the Potato crop, it would, therefore, appear that these vegetables might advantageously receive more attention than they have hitherto had at our hands.

"The failure of a large proportion of the Potato crop last year, occurring as it did at a late period of the season, seems to show that it would be desirable to grow those varieties of the Potato which ripen earlier in the autumn. Many crops which were secured early last year were disposed of advantageously, or housed in safety; while few, if any, of the later crops yielded an average quantity free from disease.

"The cultivation of early, or second early Potatoes, will offer peculiar advantages for a crop of Broccoli, or of Savoy, or other Cabbage, &c., to be put in the ground after clearing off the Potatoes. The Committee earnestly press this upon the attention of their fellow members. Large surfaces of allotment ground lay empty all last winter, while from a few other pieces Cabbages and Savoys were sold at prices ranging as high as 8d. per dozen on the ground. And lately as much as 2s. per dozen has been offered for these vegetables, if fine. The Committee believe that no plan of gardening which leaves the ground unoccupied for six or seven months out of the twelve can be profitable; they are quite sure that no such plan is creditable to the allotment holders.

"Some advance was made last year in the sale of vegetables to Birkenhead market; and believing, as the Committee do, that this opportunity offers great advantages to their fellow members, they wish again to direct attention to the matter."

THE ILLUSTRATED BOUQUET:

VOL. II., PART 9, PLATES 39 TO 43.

THIS number of the "Illustrated Bouquet," published by Messrs. E. G. Henderson & Son, of the Wellington Road Nursery, St. John's Wood, London, opens with a plate (39) of *Clematis viticella*, var. *venosa*, a fine new kind, with large, handsome, rich violet-purple flowers, from three to four and a half inches in diameter. The plant is a free-growing hardy climber, and blooms the chief part of the summer and autumn—a valuable acquisition to the more choice hardy climbers. The most ornamental kinds of *Clematis* are also enumerated and described in this number.

Plate 40 is occupied with the new handsome variegated-leaved *Sphaerostemma marmorata*, which was introduced from Borneo by the Messrs. Low, of Clapton. Treated as a soft-wooded plant, this soon attains the size of an exhibition plant, for which its rich silvery markings on a large leathery leaf make it a fit associate in a select collection of variegated plants.

Plate 41 exhibits four distinct kinds of the best and most recent hybrid *Tydaes*, or late *Achimenes*—namely *Ignescens*, *Lurline*, *Volunteer*, and *Countess of Ilchester*. *Ignescens* is a rich orange-scarlet, banded and spotted with crimson. *Lurline*, deep salmon, banded and spotted with cerise and crimson. *Volunteer*, rosy crimson, "with club-shaped bands and spots of deep velvety blood red." *Countess of Ilchester*, rosy crimson, marked with deep crimson bars and spots—"the choicest new varieties of this family" of useful plants. *Beauty*, *Elegantissima*, and *Lady Digby* are three additional kinds of equal merit; and there is an excellent digest of their culture.

Plate 42.—The subject of this plate, *Stokesia cyanea*, will vie some day with the largest and best French Asters. The patient industry of the florist has not more surely created the race of

Pompone Chrysanthemums from the small single *Daisy* of the Island of Chusan, than it will convert this enormously large, rich, "porcelain purplish-blue," single, China-Aster-looking flower to rival the *Dahlia*. The same untiring industry has just been awarded the highest prize at the command of the Floral Committee for a collection of full double *Zinnias*. And *Stokesia cyanea*, a hardy, perennial, herbaceous, autumn bloomer, will be the next subject for these experiments. For its history and cultivation we refer to the work itself.

Plate 43.—*Portlandia platantha*, a noble-looking stove plant, after the make and fashion of *Portlandia grandiflora*; or, on a smaller and more familiar text, a subdued edition of *Magnolia grandiflora*, with the leaves of some vigorous *Camellia*. This plant blooms from the cutting-pot up to three feet high—its ordinary stature under pot cultivation. The flowers are richly fragrant, and come in great profusion.

Altogether this is a varied and most useful number of the "Illustrated Bouquet," than which no work is more deserving of a prominent place in the drawing-room when garden visitors are expected, or when one has half an hour to spare to learn the fashion of the seasons in the matter of flowers without the tedium of technicalities or high-sounding words.

STOVE ORCHIDS.

(Continued from page 25.)

UTENSILS.—*A Cistern*.—The rain water that falls on the roof should run into spouts placed just under the ends of the glass frames, and conducted from them by a pipe into a large cistern. This utensil is almost indispensable to the Orchid grower. The water in it should be kept milk-warm. If placed upon the flue the water will be kept sufficiently warm. It is highly useful in that state for syringing with, and also to dip the baskets and logs with plants on them in. Just before the plants in baskets begin to grow, the peat from having been dry during the season of rest will be found hard; and then, if the plants require new baskets, the roots will be so firmly fixed to the lumps of dry peat, that, if these lumps are not softened by steeping them in the water, the roots will be broken and otherwise greatly injured; but if steeped for two or three hours the peat then is easily separated from the roots without injury to the latter.

BASKETS.—The grower will soon find that baskets are necessary, and for this reason—that some species, especially of *Stanhopea*, *Acinetas*, and a few *Peristerias*, send their flower-stems down through the soil. Now, if these are grown in pots, it is evident that the greater part of the flower-stems will perish. The baskets should be of a size in proportion to the size of the plants. The smallest may be six inches square, the next twelve, and the largest eighteen inches. To make these baskets, iron, brass, and copper, have been used. I object to the first because it rusts so soon in the damp Orchid-house, and the other two are too expensive. Earthenware also has been converted into baskets for Orchids; but its great weight and liability to break renders it undesirable. After having tried all these, I have come to the conclusion that the best material for baskets for Orchids is long Hazel rods; the smallest, for small baskets, about the thickness of one's middle finger, and the largest as thick as one's wrist, with proportionate intermediate sizes. Saw them into proper lengths, and with a sharp-pointed iron borer made red hot, bore a hole through each end. Then have ready some copper wire cut into the right lengths; lay down for small baskets two rods six inches long, and upon these at right angles three rods at equal distance. Nail these to the two first with small copper flat-headed nails, then turn over this first layer and place two more to form the other two sides of the baskets. Then take four pieces of the wire; make a loop at one end of each, and then draw the other ends through the holes at the four corners of the basket. Slip over two more at opposite sides, and then two more to fit upon them at the other two sides. For the smallest three rods deep will be sufficient. Wedge the wires with small wooden wedges at each corner, and then the basket is ready for the plant. The next size may have four rods on each side, and the size larger five on each side. There is no advantage gained in making those baskets deeper.

POTS.—The kind of pot that I have found best for Orchids is a wide shallow one, the proportions of which are as two, three, and five—that is, two inches wide at the bottom, three inches deep, and five inches wide at the top, all inside measure. Larger pots to be in the same proportions. The roots of Orchids are

generally near the surface; and besides, a larger surface is exposed by this form to the beneficial effects of the moist air of the interior. These wide pots may be ordered at the manufactory, and will cost no more than the ordinary-shaped pots. When these pots are ordered, I would recommend the grower to order also about a dozen large, upright pots, without holes at the bottom. These are to be kept filled with water, and placed at regular distances close to and touching the pipes. So placed, the cultivator will find them exceedingly handy in syringing, saving the trouble of carrying and shifting the common garden pot filled with water for the same purpose.

T. APPLEBY.

(To be continued.)

SAVING CUCUMBER PLANTS THROUGH THE WINTER—CHOICE OF SORTS.

IF I made a hotbed of tan—say the beginning of November, could I save Cucumber plants (cuttings rooted), through the winter without the aid of fire heat, ready to force in the vinery about January? Would sufficient heat rise from the bed to keep out frost?

Could you give me the average length of the following Cucumbers:—Cuthill's Black Spine, Weedon's Symmetry, Southgate, Manchester Prize, Ipswich Standard, Mills' Jewess, Napoleon III., Phenomenon, Empress Eugenie? Which three sorts do you consider the best—that is, the most prolific and handsome? I have tried this year about nine different sorts; but, according to my idea, they are all too long in the neck. The Star of the West has proved the best with me, but it is long in the neck.—O. H.

[All your Cucumbers average, under ordinary cultivation, sixteen to eighteen inches, but several of them may be grown to the length of twenty-four to twenty-eight inches. Of those you enumerate, we would recommend you Mills' Jewess, Manchester Prize, and Weedon's Symmetry.

The long necks depend more on the culture than the kinds. When grown in a bed the necks are shorter than when suspended from a trellis. We have kept Cucumbers over the winter in such a pit, by merely occupying a part of it with Cucumbers in pots, and having the other end empty of plants, so that by turning it we could increase the atmospheric heat at pleasure. When the place the Cucumbers were in got rather cold, they were moved to the other end, and a fresh supply of tan put in where they stood, and the old turned on the top of it. Unless your pit is very deep, you will scarcely succeed in a cold winter without some such plan as the above, or the power of placing fermenting material round the sides of the pit. With the latter means all things are possible when care and trouble are taken. Our old Cucumber growers had no other means.]

EFFECT OF THE LATE SEASON ON VEGETATION AT SULHAMSTEAD.

THE very unpropitious and almost sunless season we have just experienced will, I fear, prevent much of our abundant crops from ripening and being of any very great benefit to us, which it would have been under more favourable circumstances. The earth being so overcharged with water, keeps the soil to such a low temperature about the roots of the trees, that much of the fruit becomes diseased, cracks, and falls off.

FRUIT.—Apricots have been a fair crop, of good size, but deficient in aroma. Peaches and Nectarines, small, almost tasteless. Apples, heavy crops, medium size. Pears, abundant both on walls and standards, but are very much diseased; fruit cracks and falls. Strawberries, almost a failure. Raspberries, fruit large and abundant; flavour flat. Cherries, crop good, bad flavour. Currants (Red and White), heavy crop, very acid. Black Currants, medium crop, fruit sour. Gooseberries, total failure. Figs, plentiful but do not ripen well.

VEGETABLES.—Winter Broccoli and Cabbage, mostly cut down by frost. Cauliflowers and Cabbages (spring sown), very good. Peas, good; late sown flower well, but do not fill up. Onions, plentiful and good. Dwarf Kidney Beans, very indifferent. Scarlet Runners, strong; abundant crop. Broad Beans, well filled; grow very tall. Carrots, crop good; very much split. Parsnips, good. Early Celery, fine and good; late grows slowly. Potatoes (early), almost worthless; later kinds about half a crop; disease worse and more rapid than has been known here for some years. The

Lapstone Kidney has withstood the disease best, out of twelve sorts only a few being diseased. The next best, a variety of Kidney called Sussex Seedling, a very good sort, and good cropper; but boils, "the present season," a little close, but not waxy.

FLOWER GARDEN.—Scarlet Geraniums have been very indifferent; Collins' Scarlet being the best in the plain-leaf class. Cottage Maid the best in the Horseshoe variety. Compactum, straggling, bad flowerer. Cerise Unique made good foliage, but no flower. Queen of Summer, diseased. Tom Thumb's Bride, very poor. Geraniums Variegated.—Flower of the Day did well, flowered better than I have ever seen it. Mangles' has not done well, but was weak when planted out. Brilliant, scarcely variegated at all; very poor in flower. Lobelias have flowered tolerably well. Petunias, worthless. Calceolarias, very good. Verbenas, indifferent; the best have been Purple King, Géant des Batailles, Joan of Arc, Victory, and Impératrice Elizabeth, a dwarf. Dahlias have not done well, except Crystal Palace Scarlet and White Zelinda, they have flowered well. Alyssum variegatum, very good. Salvia variegata, good; S. patens, poor. Vegetable Marrows and Gourds have grown vigorously and fruited well. Cucumbers, a failure.—GEORGE KERR, *Gardener, Sulhamstead House, near Reading.*

GROWING VINES IN POTS.

I SEE in your number for September 25 "A READER OF THE COTTAGE GARDENER" asking how to grow Vines in pots. Mr. Fish gives him very good advice; but then the thing lies here—Has that man got top and bottom heat as Mr. Fish speaks so much of? If he has, all very good; but he may be like me and many others, who have to grow them without bottom heat at all; or he may have all bottom heat and no top heat. I have a small house that I grow them very successfully in: I will describe it as well as I can. The house is span-roofed, 11 feet wide, 21 feet long, 4 feet of brickwork—that is, up to the roof, and rises to 8 feet in the centre up the middle of the house. I have a walk 3 feet wide, brick wall 3 feet high; then, betwixt the inside wall and the outside, I have two rows of four-inch pipes on the ground. Over these I put flags about four inches wide, leaving two inches betwixt every two. Then I get some good turf sods, turn them upside down, and fill up with good chopped sods as high as the inner wall. I have two wood pipes about a foot wide, which go through the soil to the pipes, which give me a little top heat and also to pour water down on to the pipes to raise moisture. I have also pans on the pipe to hold water.

Now, in this house I generally fruit about two dozen pot Vines the second year from the eye; and I have some very good crops—betwixt fifty and sixty good bunches; and I generally cut ripe fruit in eighteen months from the time I put in the eyes, but the Muscat of Alexandria I cannot get to do well along with the others.

Before I start my Vines I strike all my bedding-out plants in this house, about 2000 in number. So you see I must make good use of my small house, besides growing Ferns under the Vines all summer and winter.—BOLTON-LE-MOORS.

[Mr. Fish is obliged for the above letter and the information promised. In the article referred to there are several misprints. In the fifth paragraph from the top of first column, page 386; the second and third periods should be one, with a comma instead of a period after "small." The word *south* in second line from bottom of column should be followed by *fence*. The two last periods in page 287 should read thus—"All that we have said of preparing plants will apply *also* in his case; only there will be no necessity," &c. These misprints are generally more the fault of the writer than the printer; and the only excuse for the former is the rapidity with which the article must be frequently written—otherwise the article contains what the writer believes, from experience and observation, to be the best mode for procuring early crops from Vines in pots, and these Vines perfecting their fruit early the second season after inserting the eye. There is no difficulty in growing the Vines the first season in a common hotbed—less, in fact, than growing Cucumbers and Melons, with the exception of the shifting: nay, such a Cucumber-bed is what we generally used for starting the cuttings in. Such a hotbed would be as good as anything for starting the Vines into growth the second season; but if early fruit was desired, the trouble in keeping up a dry heat by linings would be excessive. To obtain a crop seventeen or eighteen months from the eye, bottom heat in the first stages we consider of great importance. A friend of

ours boasted he succeeded without bottom heat. But did he? On examining his practice we found a quantity of moss was placed on the top of a strong covered flue; in this moss his buds in pots were fixed—and then, forsooth, he grew his young Vines without bottom heat!! There is no difficulty in rearing young plants with top heat alone. The question is, Will you get them equally early and good as by the plan proposed. We have grown Vines from eyes in a common greenhouse; but then we did not think of fruiting them until, and then latish, in the third summer, instead of the second from the eye. Moreover, according to our correspondent's account, we cannot see how he grows his Vines without bottom heat and top heat too. We should desire no better place and command of heat for growing them. He seems to have bottom heat fully at command, and top heat by means of his wooden pipes; and if he wanted more, he has only to have several openings from the shallow chamber containing his pipes furnished with slides to let out top heat at will. If we should differ at all in practice, it would be to have a corner of one of these beds filled with tan, or sweet dung and tree leaves, for starting his Vine-buds and giving them a shifting or two. We could desire nothing better than the fine-chopped sods so nicely heated for setting them in afterwards. When it was wished to start them into fruit, nothing could answer better. The heat top and bottom could be regulated to a nicety; and though fermenting matter might be more genial in the first instance, the roots getting into the fine-chopped turf must tell more favourably on the swelling of the bunches. This custom, though a common one, can hardly be said in thorough correctness to be fruiting the Vines in pots; as the Vine roots under such circumstances, if not hindered, will roam quickly far beyond the pots. We would not damp the zeal of our correspondent in the least—we hope to whet it, by telling him that many would make more of such a house than striking 2000 cuttings in autumn and growing Ferns under the Vines in winter and summer. There is a great charm to some people in having Vines and other fruit trees in pots; and when done well, as in the present case, they always display good management and unremitting attention. But were economy in labour a great consideration, that economy would be considerably promoted by planting out Vines in such at least two-and-a-half-foot-deep pits, in such nice chopped sods, mixed with some five-hundred weight of broken bones, and giving rich top-dressings every year, instead of having fresh ones grown every year in pots. If Vines do so well in pots set in these chopped sods, we feel confident that established Vines would do equally well. There is, under such circumstances, everything to help the early production of good fruit at a tithe of the labour of forwarding them in pots. However, we have no wish to damp the energy of our successful correspondent, but cordially wish him greater success, and will be glad at all times to know the particulars of that success.]

ARABIS LUCIDA VARIEGATA AS AN EDGING.

ON two former occasions you have been pleased to express your approbation of two of my suggestions with regard to plants suitable for edgings for flower-beds; and I am now gratified to see the Variegated Mint, and the *Lamium maculatum album* in almost every garden which has any pretension to a place in the "first-class."

I now venture to offer to you a third suggestion, and to enclose a plant of what I am accustomed to call and to hear called, *Arabis lucida variegata*. In my opinion it makes a better yellow-tinted edging than any plant that I know. It is hardy, easily increased, easily kept within bounds, and is evergreen, producing an immediate and permanent effect. I should be glad if you would give it a fair trial. When I was walking through the gardens at the Crystal Palace and at Kew this summer, I could not help wishing that the conductors of those establishments had a stock of plants of it, as I am quite sure that the effect would be great, and the saving in half-hardy plants very considerable.

I find that its increase is effected the most readily by scattering a little light, good soil amongst the offsets which are produced by it in great abundance. They soon take root.

I wish much that you would once more take in hand the list of variegated plants fit for edgings, and give us the names of a dozen of what you consider the cream of the lot.—A YORKSHIRE CLERGYMAN.

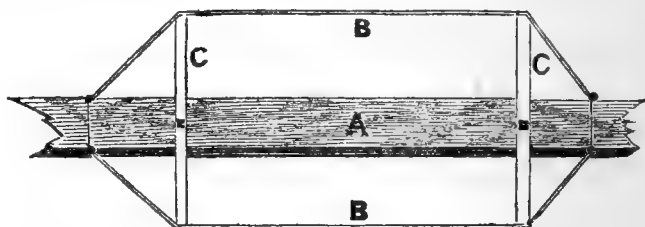
[This seems a stronger-growing variety of the plant called *Arabis lucida variegata* about London than we see thereabouts.

It is, properly, a variety of alpine only, a more upright kind. The London sort seemed to us a mere interesting alpine plant for pot culture only; but whether this is quite different, or the effect of soil and situation, must be proved. It looks very different, and more like half *Iberis saxatilis variegata*, and half *Arabis lucida variegata* of the London nurseries. It ought to get into the London trade.

Mr. Beaton has written lately on all the variegated plants that have been used in flower gardens in England in his time, and added to them. Being all fancy plants, there is no room for individual choice of sorts. Let every plant of this kind be described and compared with other plants of the same kind, and let each choose for himself. *Cerastium tomentosum* is Mr. Beaton's own favourite white edging; and Golden Chain for yellow, and *Lobelia speciosa* for blue.]

SIMPLE ARRANGEMENT FOR TIGHTENING WIRE.

ON a visit to the country seat of H. J. Williams, Esq., at Chestnut Hill, Pa., we noted in the vinery a very simple but effective method of tightening wire, of which the annexed sketch will afford an idea.



A rafter; B B wire; C C narrow strip of wood fastened to the rafter by a screw in the middle, with the wire, as represented, passing over the ends.

When the wire is attached at first, the top brace is screwed on, and the wire drawn over, and attached to the base of the rafter loosely. The lower brace of the same length as the upper is then placed in near the bottom, and drawn downward until the wire is sufficiently tightened, when the screw is applied to fasten the brace to the rafter. The lower brace at the tightening may be kept at an acute angle, so that when the wire slackens, by lessening the angle the wire is tightened. When the brace has assumed a right angle, should the wire again become loose the brace can be unscrewed, and set an inch or so lower down, when the operations before described can be repeated.

The beauty of this simple plan is, that instead of continually unfastening wires in order to tighten them, and this, too, usually unsatisfactorily, a single turn of the thumb, or of the screw-driver, effects the whole in a moment.

The principle can be applied as well to wires on arbours and trellises as to those in graperies or greenhouses. — (*American Gardener's Monthly*.)

HORTICULTURAL SOCIETY.

FRUIT COMMITTEE.—A Meeting of the Fruit Committee was held on Tuesday the 9th inst. Mr. Edmonds in the chair.

There was a large quantity of fruit exhibited. Prizes of £3 for the best, and £1 10s. for the second best, collections of Grapes were offered; and the first prize was awarded to Mr. Hill, of Keele Hall, and the second to Mr. Henderson, of Trentham. Prizes of £1 for the best, and 10s. for the second best, dishes of the following Pears were also offered. And in Class B, Seckle Pears, the first prize was awarded to Mr. Bain, gardener to A. Perkins, Esq., Hanworth Park; and the second to Mr. Park, gardener to G. H. Vernon, Esq., East Retford. Class C, White Doyenné—the first, Mr. Mason, Margotfield, Bristol; second, Mr. Spivey, Hallingbury, Bishops Stortford. Class D, Fondante d'Automne—Mr. Whiting, the Deepdene, first; Mr. Snow, Wrest Park, second. Class F, Marie Louise—In this class there were some remarkably fine specimens of fruit, but all were unripe, and it was decided that they should be placed in the fruit-room of the Society till they were in a fit state to be judged. Glass G, any variety of Dessert Pear—the first prize was awarded to Mr. S. Rolph, Mount Felix, Walton-on-Thames, for Gansel's Bergamot; and the second to Mr. Whiting for Beurré d'Amanlis.

There were no less than 19 exhibitions in this class, and 10 exhibitions in Class F.

Mr. Hope, gardener to Lady Buxton, East Ham, Essex, sent some very fine specimens of Apples; and also Golden Drop, Reine Claude de Bavay, and Goliath Plums. Mr. Snow also had a magnificent dish of Coe's Golden Drop, and some excellent Reine Claude de Bavay.

Mr. Bailey, of Newnham, exhibited a fine Seedling Melon, which received a First-class Certificate; and Mr. Oates, gardener at Stoneleigh Abbey, received a First-class Certificate for a very fine Seedling Pine Apple.

Messrs. Veitch & Son sent two Seedling Sweet-kernelled Peaches. Mr. Webster, of Gordon Castle, sent a very promising Seedling Plum; and Mr. Ingram, of Frogmore, sent a Seedling Green Gage and a Seedling Nectarine.

WHAT TO LOOK FOR ON THE SEASHORE.

(Continued from page 23.)

CLYPEASTERIÆ,

The second family of Echinidæ, so called from their shield-like form.

THE GREEN PEA URCHIN (*Echinocyamus pusillus*).—This creature—which is regarded as a link between the true Echini and the Spatangaceæ, having the teeth of the former and the spines of the latter—is the most diminutive of all the British Urchins, and at the same time one of the commonest and prettiest. Its form is generally ovate, the posterior extremity rather the broader; its spines are short, and closely packed. When alive it is of a lustrous green colour, somewhat resembling the beautiful sheen seen on the wing-sheaths of certain beetles; but when cast up dead on the shore, as it is commonly seen, it becomes of a dirty white colour.

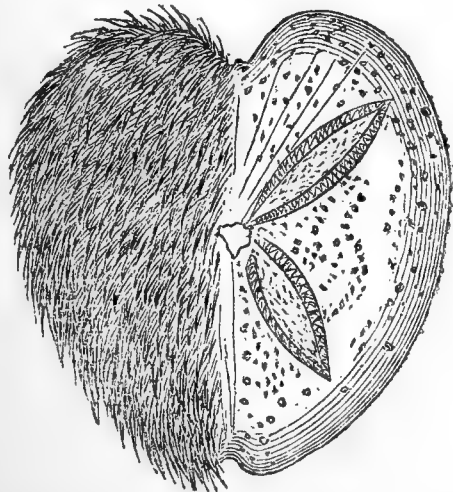
It is very frequently found among shell sand, and may be met with on most, if not all, parts of the British coast from Devon to Shetland, both east and west. It is very abundant in the Irish Sea, and is found at Guernsey at low water.

THE CAKE URCHIN (*Echinarachnius placenta*).—This creature presents a remarkable resemblance in shape to the true Star Fishes, especially in its under surface. It is circular in form and very flat, the centre only being slightly prominent. The apex is occupied by a tubercle or button, from whence radiate five pairs of ambulacra. The plates between the ambulacra are furnished with spiniferous granules; the base is almost flat, and the mouth situated in the centre. The interior of the Cake Urchin is very curiously strengthened by calcareous plates, and the spines with which the creature is furnished are extremely minute.

SPATANGACEÆ,

The third family of Echinidæ, so called from their heart-like appearance.

THE PURPLE HEART URCHIN (*Spatangus purpureus*).—This is one of the handsomest of the British Echinidæ, and much the



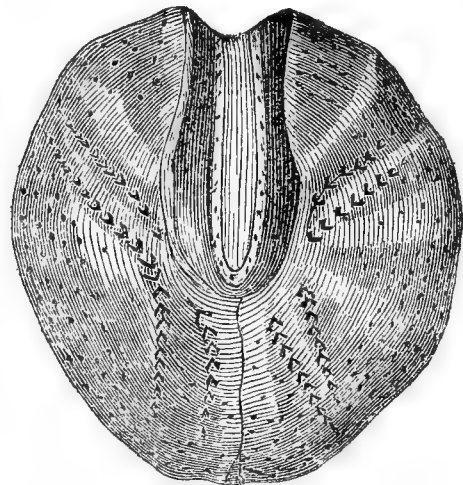
SPATANGUS PURPUREUS WITH SPINES PARTLY REMOVED TO SHOW THE SHELL BENEATH.

largest of our native Spatangæ—or, indeed, it may be said to be the *only* native species. It grows to the length of four inches by three and a half broad, and sometimes larger. It is of a deep purple colour with pale spines, some of which are very

long and curved, as on the back; others—those, indeed, which cover the greater part of the body—are short and close-pressed, and directed towards the posterior extremity, as is particularly the case with this family, the members of which delight in burying themselves in the sand or mud, and if the spines inclined in the other direction this process would be materially interfered with. It is broadly heart-shaped and depressed. If the spines be rubbed off the structure and marking of the shell are well displayed. A star is seen on the upper portion formed by the four leaf-shaped ambulacra, and the whole upper surface is rough, with the little eminences for the smaller spines. Between the ambulacra are larger eminences for the larger spines, and similar protuberances mark the under surface.

This Heart Urchin is rather rare in England, but it has been taken at Weymouth. It is said to be common in the Frith of Forth, and abundant on the scallop banks of the Isle of Man.

THE COMMON HEART URCHIN (*Amphidotus cordatus*).—This is the commonest of all the Heart Urchins, abounding in all our



AMPHIDOTUS CORDATUS DIVESTED OF SPINES.

sandy bays, and after a storm cast up on the shore in large numbers. It is called indifferently Mermaid's Head, Child's Head Urchin, and Hairy Sea Egg. In form it is heart-shaped and broad, having its dorsal centre much depressed. The spines are hair-like, and it is much given to burrowing. When alive it is of a yellowish-white colour, and is usually about an inch and three-quarters in length by very nearly the same breadth.

THE ROSY HEART URCHIN (*Amphidotus roseus*).—Is commonly when alive of a rose colour, oval in form, with the back convex. It is thickly clothed with long curved spines, directed, as usual with its tribe, towards the posterior extremity. It is found in Ireland, and in England off the Cornish coast, also in deep water off the shores of the Isle of Man.

This creature completes the Echinidæ. We now proceed to notice the strange group known as Sea Cucumbers—Holothuridæ.—W.

(To be continued.)

DOWNTON PEAR—CULTURE OF TRITONIA AUREA AND SOLANUM CAPSICASTRUM.

1. Of what quality is the Downton Pear, and when to be gathered? Is it a dessert or kitchen fruit?

2. When is Tritonia aurea to be separated, as I have a large pot (No. 12), full; and last year, although apparently at rest was found to be full of life when turned out. White shoots were running round the pot like Couch Grass.

3. I have some plants of Solanum capsicastrum in 48's. Although blossoming, they do not set any fruit. Are they worth keeping through the winter in a cool pit with flue, or should I raise fresh plants in the spring?—H. K.

[1. The Downton Pear is a dessert fruit of inferior quality. It ripens in December and January.

2. This is the right time to divide Tritonia aurea, and there are two ways of doing it. The first way is, when one has enough of it, to cut such a ball as yours into four or six parts, like cutting an Apple; and the second, or nursery-way, is to shake all the soil from the tangled roots, and to separate every bulb, and every runner from a bulb, to pot the bulbs so many in a pot, and to pot the runners so many by themselves. At that

rate your ball would furnish a score of No. 32-pots, the right size pot to begin afresh. An expert hand would do them thus in a couple of hours; a novice would need six or seven hours to get through the work—a teasing job.

3. *Solanum capsicastrum* is a very slow grower for one of that family. The way to cultivate it is, to plant it out on a hot border in the very richest soil towards the end of May, for the first six or seven years from the seed or spring cutting; to take it up at the end of September, dock its roots a little, and put it each time in the smallest pot that will hold all the roots uncramped; and when it is of a fruiting age, to keep it in sight all the winter in imitation of Mandarin Oranges, and to give it the same amount of water as would do for a good-sized *Pelargonium* or fancy *Geranium*. One sowing of it is enough for a family man in a lifetime. Your plants are now about the same size as our own, and ours will get a cold frame this next winter, as they are too young to fruit. There are some other imitations of little Orange-fruited plants; but this is the king or queen of them all, and one of the very easiest plants to manage and do well.]

NEW BOOKS.

THE FRUIT MANUAL.*—We need no other evidence that such a work as this is needed, and will find many purchasers, than the numerous packages which are sent to us containing fruit, of which the senders request us to furnish the proper names. This volume will enable any one who will take the trouble to have the pleasure of finding out for himself the information which he has to seek from others. It is a book, also, that will serve as a check upon vending fruit trees without a sufficient care that they are properly named, for the purchaser can detect whether the fruits they produce agree with the descriptions given in its pages. At this season of the year, too, he can by the same aid readily rectify any mistakes that may have been made in naming the Apples and Pears with which his orchard or garden has been planted.

It is no dictum of ours, that Dr. Hogg has “a more intimate acquaintance with fruits and their history almost than any other living authority;” and we know better than any one else, the unwearied labour and care which he bestowed upon the contents of this book to render it accurate and copious. That he has succeeded in his efforts we not only testify from our own slighter knowledge of the subject, but from the unanimous opinion of every competent judge who has referred to the volume. However, as evidence which even the most uninitiated may appreciate let us take some example, and we happen, without any premeditation, to have opened the volume at page 258, and fixed upon the “White Magnum Bonum” Plum. Let us see how the information given respecting it will bear comparison with what previous works devoted to fruit-description furnish.

The earliest is the “*Pomona*” of John Rea, published in 1665, and there we find no more than this. “*Bonum magnum*, or the *Dutch Plum*, is a very great, oval-formed yellowish Plum, and, according to the name, is good as well as great.

Batty Langley published in 1729, his “*Pomona*, or Fruit-garden illustrated,” and in that he says:—“The *Mogule Plumb* or *White Magnum Bonum*, also called the *White Holland* or *Dutch Plumb*, an excellent fruit for baking or preserving; when ’tis ripe its pulp is very yellow within, as well as without, and covered with a fine white flew: the pulp sticks to the stone, hath a fine sharp acid when ripe; ’tis a very good bearer, and a beautiful fruit: Ripe Aug. 20, 1727, south-east wall.”

In 1831, Mr. George Lindley, published his “*Guide to the Orchard*, &c., and in that we find as follows:—

“**WHITE MAGNUM BONUM** (White Mogul, White Holland, Egg Plum, Imperiale Blanche).—*Branches* long, smooth. *Fruit* of the largest size, oval. *Skin* yellow, covered with a thin white bloom. *Flesh* yellow, firm, closely adhering to the stone. *Juice* acid, not fit to be eaten raw, but excellent for sweetmeats. *Stone* oval, lance-pointed. Ripe the beginning and middle of September. It ripened at Twickenham (where Langley lived), in 1727, on a south-east wall, August 20th.”

Dr. Hogg’s “*Fruit Manual*” gives the following particulars:—

“**WHITE MAGNUM BONUM** (*Askew’s Golden Egg*; *Bonum Magnum*; *Dame Aubert*; *Dame Aubert Blanche*; *Egg Plum*; *Grosse Luisante*; *Impériale Blanche*; *White Mogul*; *Yellow*

* *The Fruit Manual*; containing the Descriptions and Synonymes of the Fruits and Fruit Trees commonly met with in the Gardens and Orchards of Great Britain, with Selected Lists of those most worthy of Cultivation. By Robert Hogg, LL.D., F.H.S., &c. London: Cottage Gardener Office.

Magnum Bonum).—Fruit of the largest size, oval, with a rather deep suture extending the whole length of one side. *Skin* deep yellow, covered with thin white bloom. *Stalk* an inch long, inserted without depression. *Flesh* yellow, firm, coarse-grained, with a brisk subacid flavour, and adhering to the stone. *Shoots* smooth. A culinary Plum, highly esteemed for preserving. Ripe in the beginning of September.”

In conclusion we will give an extract from the preface, that our readers may be acquainted with the nature of the volume’s entire contents, and we will add in the words of another, “what is done is done thoroughly.”

“My object has been to prepare a convenient manual of reference for amateur fruit-growers, nurserymen, and professional gardeners, and to condense in a space as small as possible all useful information respecting the varieties of fruits mentioned. I have been particularly careful in regard of the synonymes; and at the end of each of the kinds of fruits I have given selections of varieties for limited gardens, and for different situations and aspects. In most cases I have given a synoptical arrangement of the different fruits by which to facilitate their identification; and I trust that the pains which have been bestowed upon the work generally, will secure for it a favourable reception, and an indulgent consideration for any errors that inadvertently may have occurred.”

TRADE CATALOGUES RECEIVED.

A Descriptive Catalogue of Fruit Trees, by James Veitch, jun., Royal Exotic Nursery, King’s Road, Chelsea, S.W.—This is a catalogue embracing a very extensive collection of fruit trees, and furnishes admirable descriptions of all the most esteemed varieties both old and new. In it we observe many novelties of great merit; and from a very close inspection of the kind of information it supplies we consider it a very useful and reliable catalogue.

Catalogue of Seeds and Implements (FOR COLONIAL CIRCULATION), by Peter Lawson & Son, Edinburgh and London.—This is a happy idea of the Messrs. Lawson to publish a catalogue expressly for the colonists, to whom judiciously assorted seeds must be a great boon. To emigrants also this catalogue will be exceedingly useful.

Catalogue of Bulbs offered for sale by John Sampson, Pilsby, near Clay Cross; and a *Catalogue of Dutch Flower Roots*, by Edward Taylor, Malton, Yorkshire, are both good catalogues of good selection.

Catalogue of Choice Nursery Stock, offered by Stephen Brown, Sudbury, Suffolk, contains good selections of the usual stock of a nursery.

Catalogue of Imported Bulbs, by Stephen Brown, Sudbury, Suffolk, will be found to enumerate a good stock of these articles.

TO CORRESPONDENTS.

MILDEW IN VINERY (*Isabelle de Roubigné*).—If you had employed flowers of sulphur as soon as the mildew appeared, and had persevered in using it according to the directions we have frequently given, your bunches of Grapes would not have been destroyed, nor would the *Geraniums* and other plants have been mildewed. You can prevent its appearance next year almost completely, by painting over the walls, flues, and stems of the Vines, as soon as the leaves have fallen, with limewash as thick as paint, in which flowers of sulphur have been mixed in the proportion of a handful to a bucketful of limewash. Clean out the refuse and leaves from the vinery, and burn them before applying the limewash. Fork over the vinery-border, and sprinkle its surface with flowers of sulphur. Repeat this sprinkling in the spring; and if any mildew reappears on the Vines in the summer, dust them thoroughly with flowers of sulphur, applied by means of a Boite a houppes. Lime water will not kill weeds on gravel walks, but it will kill worms in lawns. One peck of freshly slaked lime is enough for forty gallons of water, to be repeatedly stirred, and then left until it becomes clear.

WORKS ON PRUNING, &c. (*G. F. Wade*).—You will find all you ask for, and much information besides, in “*The Garden Manual*,” published at our office, price 1s. 6d. Free by post for 1s. 8d.

FUCHSIAS NOT FLOWERING (*L. R. Lucas*).—The Fuchsias would need quite as much heat as you propose (40° to 45°), and should not be potted. Unless such kinds as *Doniniana* and *Serratiflora*, they do little good in dark weather in winter. We would rather advise you to let them rest, and start as early as you like in spring. Your sand stages are just the thing for Fuchsias, Scarlet *Geraniums*, *Cinerarias*, and *Calceolarias*, but for fancy and florist *Pelargoniums* the spare shelves would be better, or you might get each pot on a reversed saucer, or a square piece of wood, anything by which the bottom of the pot shall not always stand on a damp medium, especially in winter.

COCOA-NUT FIBRE FOR ORCHIDS AND FERNS (*H. W. E.*).—The cocoanut refuse is not at all fit for Orchids, but it is the finest thing in the world for all Ferns which need peat, and to use it instead of peat, and without sand. We have tried it for Ferns on the recommendation of a clergyman

in THE COTTAGE GARDENER last spring, and we have been astonished at the rate they grow in it. We shall never use another morsel of peat for Ferns. We have a couple of the nosegay Fern, *Adiantum cuneatum*, which duchesses have in all their flower-glasses through the winter. They were out of thumb pots in April last, and now they are of the size of a wedding present, and actually so disposed of, and all from this cocoa-nut refuse.

GERANIUM CUTTINGS (*A Young Beginner*).—You do not tell us what your conveniences are; but supposing that you have merely your window, we would let all the cuttings alone until March. You may give them a little manure water to give strength, and need not crowd them, as the pots may stand a little bit apart. In fine weather, and especially when the heat of the room is rather warm and dry, which it will be if there is a fire in frosty weather, the sprinkling the leaves will not only keep them clean, but keep them cool and moist, and lessen evaporation. This will often be more beneficial than deluging at the roots. You seem to have been studying the subject, and we wish you success. By the end of February the sun will have gained power, and your young plants will be more likely to succeed when transferred to single small pots, and well-aired heated soil.

ARUM CRINITUM (*W. W. B.*).—It is a very old half-hardy plant from the islands in the Mediterranean, requiring exactly the same treatment as *Cyclamen persicum* while growing and when at rest.

HEATING A GREENHOUSE SOON TO BE REMOVED (*T. P.*).—Get a middle-sized, upright, round, iron stove about three feet in height, and from ten to twelve inches in diameter, and place it about the middle of the house, with a metal tube to go through the roof, or through the back wall, securely luted at the joints. If the stove is flat on the top all the better, and set on it a round vessel some four or six inches deep filled with water. Use good coke for burning, and when cleaning out bars and ash-pit use a little water for keeping down dust. Do not trust to any stove without a chimney or pipe to take off smoke, &c., in some way or other.

OXALIS BOWIEI (*A. S. P.*).—No *Campanula* was ever called *Bowiana*, or else you were thinking of one thing, and writing about another. But we think we know the real plant which you intended to ask about. Was it not *Oxalis Bowiei*? Of course it was, and a most lovely and very sumptuous bed for late summer, and a long autumn it makes to those who grow it properly. Naturally, it begins to grow with the *Amaryllises*, and dies down in June like them; but it will endure to be made to rest from November to April; to begin to grow them in pots, of course; to be bedded out by the end of May, when its large, soft, succulent, Trefoil-looking leaves will soon spread out and cover the whole soil, then flower-stalks up from the roots, and no end of flowers till October, every flower nearly as large as a shilling piece, and mostly as flat, and of the richest tint of brilliant rose, with a little carmine in it. Like *Gazania splendens*, when the sun is on this *Bowiei*, there is nothing of the same tint in the flower garden which will come near it in richness of effect. You can have it in any of the nurseries in Norfolk, and over that county.

ETHER RESIDUUM.—Another correspondent, "R. F. S.," wishes to know "where it can be bought at the cheapest rate."

FERNS FOR A WARD'S CASE (*Overdessel*).—For this case (four feet by two feet) employ small plants of the *Aspidium filix-mas*, and *A. angulare*, to be removed by-and-by when they overgrow the space, together with *Polypodium vulgare*, *Scolopendrium vulgare*, *Asplenium trichomanes*, and *A. adiantum nigrum*, are the best of the kinds you enumerate for a Wardian Case of four feet by two feet. They will all grow in a mixture of equal parts turfy peat and mellow loam blended with about a sixth part of the whole of silver sand. The drainage must be complete. "The most reliable authority, and the most useful for botanical purposes," of the works you mention, is Moore's "Nature-printed Ferns," octavo edition, published by Bradbury & Evans, and you will find Moore's "Handbook of British Ferns," latest edition, a very useful companion in addition.

PRESERVING CUT FLOWERS (*A Constant Reader*).—We cannot say whether or not the charcoal may be used a second time, that can be learned by experience; but if it should not, it is a substance of so little cost that the expense of renewal would be very trifling. The account says the stalks should be immersed in the charcoal, and therefore we suppose it to be correct; but if you try the experiment you will soon know all about it.

REMOVING A BOX EDGING (*R. S. F.*).—Were the old and high Box edge ours, we would cut off a good part of the top of the edgerow, clear away any dead parts below, remove a little of the surface soil, top dress with fresh loam and leaf mould, and if the soil was at all dry give a good watering. This moving away of part of the top and top dressing will cause the main stems to be more charged with concentrated sap than they otherwise would be. We then leave all alone until the end of April, when we would cut and regulate to the desired shape. If done earlier the young growth might be bleached by frost. The bare stems at bottom will the most likely break all over afresh, and the warmer the top of the edge is left the more likely will they do so. As a general rule, Box should be trimmed about April or May, for if done earlier they are apt from frost to look brown all the summer. We do not think you have any reason to plant new Box. We have known old unsightly plants renovated from the above treatment.

POULTRY AND RABBIT DUNG (*S. S.*).—This mixture is very well suited to your stiff loamy soil. Those who talk about its being "too hot and rank to be dug in," do not accept as authorities. Wherever you are intending to plant Cabbageworts, or about the borders where your Roses and Hollyhocks are, you may very safely apply the compost. If your "muck pit" were watertight, the drainage would be one of the best of liquid manures applied undiluted to Rhubarb, Asparagus, Sea-kale, Cabbages, and Lettuces.

HEATING BY ARNOTT'S STOVE (*A Devonshire Subscriber*).—You will find rather full particulars of making and heating by Arnett's brick stoves, whether placed inside or outside of the house, in the "Orchard-house," by Mr. Rivers. The economy of such stoves consists chiefly in their being placed inside the house to be heated. This would not answer particularly well in an elegant house, communicating with the drawing-room. We should rather refer you to Mr. Hazard, for the particular information you require. We have seldom used the Polmaise plan except as an auxiliary. We can see nothing economical in adopting it in such a case as yours, as he drains would be pretty well as expensive as small flues. With the ground sinking so far as four feet below the level of the greenhouse floor, here is every opportunity for having a small furnace there, without sinking or a stoakehole. From such a furnace a small flue could enter at the corner, and go round the middle of the house, under the centre stage, returning to a small chimney above the furnace. If the floor of the house is not already finished, we would take a small flue round underneath the

pathway. The flue we should bottom with a tile or slate from the sides, with two bricks on edge, seven inches apart, cover with a thin slate, but tile for a yard from the furnace. Place a thin layer of plaster on the slates, and then cover with ten to twelve-inch square tiles, on a level with the floor. No heating medium would thus be seen. The path would be always dry and comfortable in winter, and there would be plenty of heat; and, although the flue was level all round, there would be a good draught if the bottom of the flue was two feet and a half higher than the bottom of the small furnace, and the small chimney was as high as the back of the greenhouse. To avoid smoke, coke should be used, after employing a handful of small coal to light with. The bricks would merely want to be set in good firm mortar, and no plastering inside. If the pathways were likely to be scamped much over by frolicsome children, two bricks, or even three bricks on bed, would be better than two bricks on edge, though the latter will be strong enough in ordinary cases. If the flues were to be above ground, it would be most economical to have them in the centre of the house to avoid the doorway; and these might be hard-burned nine-inch drain tiles, using bricks for four feet from furnace. After seeing many modes, the under-floor plan is what we should adopt in such a case as yours, leaving Polmaise alone. You may get hints for internal arrangement from answers to another correspondent.

HOP POLES (*Idem*).—About two inches in diameter is the usual size. If much larger they would be needlessly dearer and more unmanageable. The first year's poles need not be more than six feet high, but twelve feet high are afterwards required. About 500 fresh poles per acre are required annually to keep up the stock, and replace those rendered unserviceable by breakage and decay.

CAMELIAS ON BACK OF VINERY (*W. L.*).—Supposing your house to remain as it is, with the stage at the back, the house would be much improved by turning the present front stage into a flat table, or with a stage falling equally to the back and front paths. If you moved the back stage altogether, such an arrangement would be desirable, or when you walk along the back path, you will have only the back of the stage to look at. A large greenhouse belonging to a friend has been so altered the other day, and the back wall planted with Camellias. The Camellias are always green, and the stage sloping to the back in a hipped-roof like yours is kept gay with plants in bloom, whilst the plants that are growing and coming into bloom are kept chiefly on the south side. The Camellias are always green, under the shade of the Vines, and altering the front stage will give them more light in winter and spring. If scarce of room two feet and a half wide would do for the border, and instead of sinking too deep the plants would thrive better if the border was six or nine inches above the pathway, kept up by a slate or board. See that drainage is secured.

OAKEN ARCH (*L. G.*).—Your Oak which is so arched as to enable you to plant the top in the ground, will, probably, emit roots at the top, if firmly retained in the soil so as not to be wind-shaken.

TRAINING PYRAMIDAL PEAR TREE (*A. R. K.*).—It would require a pamphlet to give all the information you require. Buy Rivers' "Miniature Fruit Garden," it contains all particulars about pyramidal training.

NAME OF TREE (*W. X. W.*).—The leaves are from the *Prunus padus*, or Bird Cherry. Their red tint is very ornamental at this season.

NAMES OF PEARS (*H. S. W.*).—1. Not known. 2. Winter Nelis. 3. Beurré Diel. 4. Gansel's Bergamot. 5. Chaumontel. 9. Beurré d'Aremberg. 12. Marie Louise. 16. Williams's Bon Chrétien. 19. Beurré de Rance. (*T. Turner*).—It is the Eyewood, but a small specimen.

NAMES OF FRUITS (*M. A.*).—Your Grape is the *Frankenthal*. (*S. W.*).—2. Nonsuch. 4. Coe's Golden Drop. 9. Pearson's Plate. 10. Emperor Alexander. 12. Waltham Abbey Seedling. 13 and 14. Duchess Oldenburgh. 15. White Ingestre. 16. Hollandbury. 17. Russet Nonpareil. Names of others unknown. It is always difficult to discriminate fruit when in an unripe state.

POULTRY AND BEE-KEEPER'S CHRONICLE.

WORCESTER POULTRY SHOW.

For some years past we have had to record that the above was held in the Corn Exchange, and we had to praise the building for the purpose. This year there was a change: commerce gave way before the fine arts, the Music Hall exchanged the notes of the large organ for the crowing of cocks, and the kettle drums, the only other musical instruments that remained in the orchestra, were mute. The hoarse notes of the giant Geese of the present day are loud enough for anything.

Although not perhaps so light as the former building, yet this was better than very many we have seen. It is square, lofty, well lighted from the top, and ventilated without being exposed to draughts. The arrangements were good, and it was necessary they should be, as the pens entered completely filled the Hall, leaving only such space as was necessary between them. The fowls were placed in rows at a convenient height, surmounted in some instances by Pigeons, in others by the smaller breeds, as Game and other Bantams. The bottom rows of cages were tenanted only by Ducks, Geese and Turkeys.

The entries were more numerous than they have ever been; and the improvement was not confined to this—there was also great progress in quality. It is hardly too much to say that the absence of indifferent specimens was more remarkable than usual, and that this notoriously bad season had either been partial in its operation, or it had been overcome by the knowledge and painstaking of most of our principal amateurs.

The classes open with *Game*, and No. 1 showed a goodly array. This class enjoyed the privilege of selection by Mr. Kerr, of the China Works in this town, for the extra prize he last year

offered to the Dorkings. We have no doubt this influenced the entries, and the recollection of the exceedingly beautiful work of art of last year will cause those who have seen it in possession of the Hon. W. W. Vernon, to envy that gentleman his good fortune in repeating his exploit. The prize could not go to any one more deservedly popular among amateurs. The contest was, nevertheless, a close one, and Mr. Archer was no laggard in the race—his birds were beautiful. The Brown Reds were as good, but far less numerous than their Black-breasted brethren. Mr. Fletcher and Captain Hornby were here the fortunate. The Duckwinged and other varieties call for no especial mention, if we except therefrom two pens of Piles belonging to Messrs. Martin and Griffiths, and which were deservedly admired.

At Worcester, as elsewhere, the *Dorkings* are foremost in entries and competition. It would be impossible to see a better class than was seen here; and we predict the three pens that carried the honours will do so again, even in the teeth of greater numbers. Desirous as we are of curtailing our report, and naming only such pens as call for it, we cannot forbear the remark that three such as Captain Hornby's, Mr. Wakefield's, and the Marchioness of Winchester's are seldom seen. This latter might take a higher position if the birds were in better condition. We have never seen better birds; but from what we heard in the Show, they are to be liliputians compared to the Broddignags that will appear at Birmingham. "Time will show," as mother used to say when we asked if there was pudding for dinner; but we do not expect to see them beaten. The first-prize pen also carried off the extra one given by the innkeepers. The Rev. G. F. Hodson exhibited an unusually good pen of White Dorking fowls.

The *Spaniards* were very good, but some seemed to lack condition sadly. It was evident their owners had not set themselves to combat a bad season, and their birds are good evidence of the fact: the prize pens form exceptions.

There is no doubt that in Mincing Lane phraseology we may say, "*Cochins* is up." The quality of many of the birds left nothing to desire, and the sale of the prize pens at excellent prices was satisfactory to all parties. We except no class of this breed from commendation; but strange to say, in the neighbourhood of Worcester, almost where Mrs. Herbert can sit at home and hear their crow, we should put the White last on the list. Miss Musgrove's pen of Grouse birds is a very good one.

We have to repeat here that which we have often said of late—the Golden-pencilled *Hamburgs* are going a-head of the Silver: the latter miss Mr. Archer. Messrs. Munn and Smith deserve notice in Golden, and Mr. Griffiths in Silver. Mr. W. C. Worrall has an eye for a Golden-spangled *Hamburg*, therefore he is generally first; but Mr. Cannan may boast that he has good birds. These were not nearly so numerous as the Silvers, which were a strong class. We can speak very highly of Mrs. Pettat's pen. This lady realises one excellence which seems almost lost—that of a properly laced and barred wing on a Spangled *Hamburg*. This point is common—nay, indispensable in *Polands*; but we seek it almost in vain in *Hamburgs*. Mrs. Pettat's birds have it in perfection. It must not be supposed they were the only ones, as five pens figured in the prize sheet. The same lady deservedly took first and second for Golden *Polands*. Col. Clowes headed the Silver *Polands* with an unusually good pen, and the class generally was an excellent one. Black *Polands* were good, but not as numerous as we have seen them. The distinct varieties gave Mr. Botham first for *Brahmas*, and Mr. Ballance second for *Malays*.

In *Turkey* poults Miss J. Milward headed the list with a pen weighing 29½ lbs., Mr. Mansfield following with 27½. Mr. Wakefield's weighed but one pound less.

Mr. Fowler has the *spécialité* of *Geese*. He was first—his pen weighed 56 lbs. Mr. W. Mansfield followed with a beautiful pen of White, weighing 50 lbs. Mr. Fowler was the vocative case of Aylesburys; and Mrs. Seamons took first, second, and commendations. The Rouen *Ducks* were good, and brought honours to Messrs. Fowler and Holme.

In making mention of the various class of *Ducks*, we must ask for some new arrangement. In this instance, there were many specimens of great merit, but only two prizes to award. These were given, first to a pen of Ruddy Sheldrakes; second, to one of Brown Call Ducks, both the property of Mr. H. D. Bayley. Miss S. Perkins, Mr. Earle, and Major Henniker, all deserved prizes.

The *Bantams* formed a small exhibition, and the Game were exhibited in different classes. We must refer our readers to the

prize list, all those that are mentioned deserved notice richly. We would specify particularly Mr. Lane's pen.

The Sweepstakes for *Game Cocks* did not fill well, but the birds were very good. The *Game Bantams* were not only numerous, but excellent. The first-prize bird of Mr. H. D. Bayley was perfect, and good ones were plentiful as blackberries.

JUDGES—Of *Poultry*, Mr. J. Baily, of London; Rev. R. Pulleine, Kirkby Wiske, Yorkshire; and Mr. Hewitt, Birmingham. Of *Pigeons*, Mr. T. G. Cottle, of Cheltenham.

GAME (Black-breasted Red).—First, Hon. W. W. Vernon, Ranton Abbey, Stafford. Second, E. Archer, Malvern. Highly Commended, D. Ashworth, 6, Thomas Street, Halifax, Yorkshire; W. Cox, Brailsford Hall, Derby. Commended, J. Fletcher, Stoneclough, near Manchester.

GAME (Brown-breasted Reds).—First, J. Fletcher. Second, Capt. W. W. Hornby. Highly Commended, E. Archer.

GAME (Duckwings and other Greys and Blues).—First, J. B. Chune, Lincoln House, Coalbrookdale. Second, F. Munn, Temple Lawn. Commended, Hon. W. W. Vernon.

GAME (any other variety).—First, J. Martin, Mildenhall Mill, Claines (Piles). Second, G. Griffiths (Piles). Commended, Hon. W. W. Vernon (Piles).

DORKINGS (Coloured).—First, Capt. W. W. Hornby. Second, C. H. Wakefield, Malvern Wells. Third, Marchioness of Winchester. Highly Commended, Rev. J. F. Newton, Kirb, -in-Cleveland, near Stokesley, Yorkshire; F. Key, Beverley; C. H. Wakefield. Commended, E. H. Garrard, Salford Vicarage, near Evesham.

DORKINGS (White).—Prize, Rev. G. F. Hodson, North Petherton, near Bridgewater.

SPANISH.—First and Second, J. R. Rodbard, Aldwick Court, Wrington, near Bristol. Third, R. Everett, Gibraltar Cottage, Monmouth. Highly Commended, G. Lamb, Red Hill House, Compton, near Wolverhampton. Commended, J. H. Craigie, Woodlands, Chigwell, Essex.

COCHIN-CHINA (Cinnamon and Buff).—First, J. Cattell, Moseley, near Birmingham (Buff). Second, T. Stretch, Marsh Lane, Bootle, near Liverpool (Buff). Highly Commended, Mrs. E. Everett (Buff); H. Tomlinson, Balsall Heath Road, Birmingham (Buff).

COCHIN-CHINA (Partridge and Grouse).—First, Miss V. W. Musgrove, West Tower, Aughton, Liverpool. Second, Mrs. S. R. Herbert, Powick, Highly Commended, P. Cartwright, Oswestry. Commended, T. Stretch.

COCHIN-CHINA (any other variety).—First, W. Dawson, Hopton Mirfield, Yorkshire. Second, R. Chase, Moseley Road, Birmingham. Highly Commended, Mrs. S. R. Herbert. Commended, G. Lamb, Red Hill House, Compton, near Wolverhampton.

HAMBURGHS (Gold-pencilled).—First, J. Munn, Heath Hill, Stackstead, near Manchester. Second, S. Smith, North Ouram, near Halifax. Highly Commended, W. Pierce, Hartford, near Northwich; Messrs. Carter and Valiant, Poulton-le-Fylde.

HAMBURGHS (Silver-pencilled).—First, G. Griffiths, Church Street, Worcester. Second, W. H. Kerr, Worcester. Commended, J. Freeman, Gaines, near Worcester.

HAMBURGHS (Gold-spangled).—First, W. C. Worrall, Liverpool. Second, W. Cannan, Bradford.

HAMBURGHS (Silver-spangled).—First, Mrs. Pettat, Ashe Rectory, near Basingstoke, Hampshire. Second, W. Pierce, Hartford. Highly Commended, J. Munn, Heath Hill, Stacksteads; W. Cannan. Commended, Mrs. Pettat.

POLANDS (Golden).—First and Second, Mrs. Pettat. Commended, J. Dixon.

POLANDS (Silver).—First, Lieut.-Col. Clowes, Froxmore Court, Crowle. Second, G. C. Adkins, Birmingham. Highly Commended, J. Dixon, Bradford.

POLANDS (Black with White Crests).—First, T. P. Edwards, Lyndhurst, Hants. Second, G. Ray, Minestead, Lyndhurst, Hants.

Any distinct variety not included in the above Classes.—First, G. Botham, Wrexham Court, Slough (Brahma). Second, C. Ballance, Taunton (Malay Black-breasted Red). Highly Commended, H. Craigie, Woodlands, Chigwell, Essex (Brahma Pootra); W. H. Kerr, Worcester (Silkies); J. K. Fowler, Prebendal Farm, Aylesbury (Brahma).

TURKEY POULTS.—First, Miss J. Milward, Newton St. Loe, near Bath. Second, W. Mansfield, jun., Dorset. Highly Commended, H. Hudson, The Elms, near Pershore; C. H. Wakefield, Malvern Wells.

GOSLINGS.—First, J. K. Fowler, Aylesbury. Second, W. Mansfield, jun. Highly Commended, Mrs. M. Seamons, Hartwell, Aylesbury; Marchioness of Winchester; Mrs. Guilding.

DUCKLINGS (Aylesbury).—First and Second, Mrs. Seamons. Highly Commended, Mrs. Seamons.

DUCKLINGS (Rouen).—First, J. K. Fowler. Second, J. Holme, Knowsley, near Prescott. Highly Commended, Mrs. A. Browne, Shrewsbury. Commended, F. Munn, Temple Laughern, Worcester.

DUCKLINGS (any other variety).—First and Second, T. H. D. Bayley, Ickwell House, near Biggleswade, Beds. Highly Commended, Miss E. S. Perkins; F. W. Earle, Edenhurst, Prescott, Lancashire; Major Henniker, Thornham Hall, Suffolk.

BANTAMS (Game, Black-breasted and other Reds).—First, and Hotel-keepers' Prize for best pen of Game Bantams in the Show, W. R. Lane, Bristol Road, Birmingham. Second, W. S. Forrest, Eaglecliffe, Greenhithe, Kent. Highly Commended, T. H. D. Bayley; G. Finch, Worcester. Commended, W. Evans, Victoria Brewery, Prescott.

BANTAMS (Game and other colour).—First, J. Camm, Farnsfield, Southwell, Notts. Second, H. Shield, Northampton. Highly Commended, H. W. Griffiths, Worcester. Commended, H. Shield; I. Thornton, Heckmondwike, near Leeds; R. Hawksley, jun., Southwell, Notts.

BANTAMS (Gold and Silver-laced).—First, Rev. G. F. Hodson. Second, Miss G. Everett, Gibraltar Cottage, near Monmouth. Commended, T. H. D. Bayley.

BANTAMS (Black or White).—First, J. Dixon, North Park, near Bradford, Yorkshire. Second, T. H. D. Bayley. Commended, Rev. G. F. Hodson; C. Adkins, Birmingham.

SWEEPSTAKES.

GAME COCK CLASS.—First, H. Horton, Albert Cottage, St. John's, Worcester. Second, E. Archer, Malvern. Third, J. Holme, Knowsley, Prescott. Highly Commended, J. Fletcher, Stoneclough, near Manchester.

GAME BANTAM COCK.—First, T. H. D. Bayley. Second, H. Bates, Harborne Heath Cottage, Edgbaston, Birmingham. Third, J. Camm. Highly Commended, H. W. Griffiths, South Corner, Britannia Square, Worcester; H. Bates; H. Shield; G. Finch. Commended, R. Swift.

PIGEONS.

POWTERS (any colour).—First, G. Robson, 25, Walworth Street, Hull. Second, G. Goore, Aigburth Vale, near Liverpool.

CARRIERS.—First, G. Robson. Second, Messrs. Siddons, & Sons, Aston, Birmingham. Commended, C. Felton, Erdington, near Birmingham.

ALMOND TUMBLERS.—First, J. Percivall, Client Villa, Harboure, near Birmingham. Second, H. Child, jun., Sherbourne Road, Birmingham. (A very indifferent class.)

MOTTLED OR OTHER TUMBLERS.—Prize, J. Percivall. Highly Commended, Marchioness of Winchester. Commended, H. Baker, Worcester; C. England, Hilton Street, Worcester.

BALDS OR BEARDS.—Prize, J. W. Edge, Aston New Town, Birmingham.

OWLS (Silver or Blue).—Prize, H. Morris, Perry Vale, Forest Hill, Kent. Highly Commended, W. Hewett, jun., Forest Hill, Kent. Commended, T. T. Parker, Charnock Chorley, Lancashire (Silver Owls).

OWLS (any other colour).—Prize, J. Baily, jun., 113, Mount Street, Grosvenor Square, London. Highly Commended, G. Goore; H. Morris; W. Hewett, jun.

BARBS (of any colour).—First, H. Child, jun. Second, H. Morris. Highly Commended, J. H. Craigie, Chigwell, Essex.

FANTAILS (White).—Prize, J. Baily. Commended, Miss J. Milward, Newton St. Loe, near Bath; H. Morris.

FANTAILS (any other colour).—Prize, J. Baily, jun. Highly Commended, H. Child, jun.

NUNS (any colour).—First, T. T. Parker. Second, H. Child, jun.

TRUMPETERS.—Prize, F. Key, Beverley. Highly Commended, J. Baily; H. Child, jun.; H. Tomlinson, Balsall Heath Road, Birmingham. (A remarkably good class.)

TURBITS.—First, H. Child, jun. Second, H. Morris.

JACOBS.—First, A. P. Pressdee, Belgrave Street, Birmingham. Second, W. Hewett, jun. Commended, H. Morris.

RUNTS.—First, H. Child, jun. Second, J. H. Craigie, Woodlands, Chigwell, Essex.

ANTWERPS.—Prize, C. Felton, Erdington, near Birmingham. Commended, T. T. Parker.

ANY NEW OR DESERVING VARIETY.—First, H. Child, jun. Second, Marchioness of Winchester. (An exceedingly good class, containing many excellent birds of their respective varieties.)

TO THE SECRETARIES OF POULTRY SHOWS.

I WISH to complain of the remissness of Secretaries of Poultry Shows in sending catalogues to exhibitors and others. Some time since I sent stamps to the Secretary of the Worcester Show for a catalogue of the Show just held. The Show is over, and I have received no catalogue. The consequence of this is that I wished to have claimed a pen of Bantams by telegraph, and was unable. Here, then, is a triple evil. I am disappointed, an exhibitor has lost the chance of a customer, and the Show has lost the percentage on the sale of a pen of birds. I really think that catalogues should be sent to exhibitors on the first day of a Show. If Secretaries of Poultry Shows would remember how much their success depends on little attentions to exhibitors and others, they would not so often be found wanting as they are.

If you will allow me, I will send you a few friendly criticisms on the management of some of our principal Poultry Shows. —J. B.

[The above is from a clergyman, and written in the best possible spirit, and we shall willingly insert any similar comments he may make upon the conduct of our Poultry Shows. At the same time let us remind our correspondent, and our readers generally, not to attribute to want of attention or to discourtesy those disappointments which usually arise from oversight during a pressure of occupation. It is no light task being the Secretary of a Poultry Exhibition. Be it observed, also, that no catalogue ought to be issued until after the Judges' awards have been recorded.]

MIDDLETON AGRICULTURAL SOCIETY'S POULTRY EXHIBITION.—OCT. 4TH, 1860.

(From a Correspondent.)

At this Exhibition there were classes for poultry open to all competitors, and other classes for parties living in the district. The Dorkings, Cochins, and Hamburgs were remarkably good, the Game not nearly so good as at other exhibitions lately held in the neighbourhood. The Geese were very fine.

Judges of Poultry.—Mr. Teebay, Fulwood, near Preston, and Mr. Henderson, Bury, Lancashire.

The following prizes were awarded:—

GENERAL COMPETITION.

SPANISH (of any age).—First, J. Dixon, Bradford, Yorkshire. Second, T. Robinson, the Gill, Ulverstone. Highly Commended, S. H. Hyde, Taunton Hall, Ashton.

DORKINGS.—First, J. Robinson, Vale House, Garstang (old). Second, W. Cannan, Bradford, Yorkshire (old). Highly Commended, G. Potter, Fallow Field (old); J. F. Newton, Kirby-in-Cleveland (chickens); J. Robinson (chickens). Commended, T. W. Hill, Hopwood (chickens). A very good class.

GAME.—First, J. S. Butler, Poulton-le-Fylde, near Preston. Second, R. Schofield, Hollin Lane, Middleton. Highly Commended, T. Butterworth, Belfield, near Rochdale.

COCHIN-CHINA.—First and Second, T. Stretch, Marsh Lane, Bootle, near Liverpool (old birds and chickens). Highly Commended, J. Robinson, Vale House, Garstang (old); W. Dawson, Hopton, Mirfield, Yorkshire (old Cinnamon, very good, but in moult). A good class.

HAMBURGS (Golden-pencilled).—*Chickens.*—First, J. Munn, Heath Hill, Stackstead, near Manchester. Second, Mrs. H. Sharp, Bradford, Yorkshire. Highly Commended, J. Dixon, Bradford, Yorkshire; Parkinson and Laurensen, Poulton-le-Fylde.

HAMBURGS (Silver-pencilled).—*Chickens.*—First, W. Cannan, Bradford, Yorkshire. Second, J. Dixon, Bradford, Yorkshire. Highly Commended, J. Munn, Heath Hill, Stackstead, near Manchester.

HAMBURGS (Golden-spangled).—*Chickens.*—First, J. Ashcroft, Waterloo, near Ashton. Second, J. Andrew, Waterhouses, near Ashton-under-Lyne. Highly Commended, J. Dixon, Bradford, Yorkshire; W. Kershaw, Heywood; W. Cannan, Bradford, Yorkshire (an old hen and two chickens). A first-rate class.

HAMBURGS (Silver-spangled).—*Chickens.*—First, J. Fielding, Newchurch, Rossendale. Second, J. Dixon, Bradford, Yorkshire. Highly Commended, J. Andrew, Waterhouses, near Ashton-under-Lyne; N. Marlow, Denton; T. Butterworth, Boat House, near Belfield, Rochdale. (The class good throughout.)

BANTAMS.—First, E. Fielding, Church Steps, Rochdale (Silver-laced, very good). Second, J. Dixon, Bradford, Yorkshire (Black). Highly Commended, R. Heyworth, Willow Hill, Crumpsall Green (Black Red Game). Commended, T. W. Hill, Hopwood (Gold-laced).

BELONGING TO PARTIES LIVING IN THE DISTRICT.

SPANISH (of any age).—First, S. Harrop, Middleton. Second, E. Fielding, Castleton.

DORKINGS.—First and Second, T. W. Hill, Hopwood. Highly Commended, S. Harrop, Middleton; J. Mellor, Lichford. (A very good class.)

GAME.—First, T. Mellor, Blackley. Second, J. Turner, Unsworth (Not a good pen in the lot.)

COCHIN-CHINA.—First, E. Smith, Middleton (old). Second, S. Harrop, Middleton (old). Commended, S. Harrop.

HAMBURGS (Golden-pencilled).—*Chickens.*—First, S. Fielding, Middleton. Second, W. Kershaw, Heywood.

HAMBURGS (Silver-pencilled).—*Chickens.*—First, S. Fielding, Middleton. Second, J. Heywood, Bowlee.

HAMBURGS (Golden-spangled).—*Chickens.*—First, W. Kershaw, Heywood. Second, J. Ogden, Chadderton.

HAMBURGS (Silver-spangled).—*Chickens.*—First, S. Fielding, Middleton. Second, E. Collinge, Middleton. Commended, J. Partington, Little Heaton.

BANTAMS.—First, E. Fielding, Castleton (Gold-laced). Second, J. Wild, New Moston (White).

DUCKS (Rouen).—First, J. Howe, Whittle. Second, G. Partington, Whittle. Highly Commended, S. F. Armitage, Middleton. (A very good class.)

DUCKS (Aylesbury).—First, T. W. Hill, Hopwood. Second, W. Kershaw, Heywood. Highly Commended, T. W. Hill.

GESE.—First, W. Kershaw (Toulouse, very large, beautiful in condition.) Second, W. Kershaw (White Gander, very large).

PIGEON DISEASES.

THE first symptoms are that the bird becomes languid and dull, and though it takes its usual food, seems to get weaker every day. After awhile a thin glutinous matter is formed round the eyes, often causing the bird to keep them shut for some considerable time. This matter soon extends to the mouth, and emits a bad smell, and prevents the bird from swallowing. It soon droops and dies after this. The disease is infectious, and seems at first as if it were a touch of the gapes.—J. C. PRICE.

[I have no practical knowledge of this disease. From the description I cannot determine if it is analogous to influenza or diphtheria. In either case I would advise a tea-spoonful of castor oil. In the former case wash the eyes and mouth with a solution of borax; for the latter anoint the throat by means of a feather dipped in a mixture of good vinegar made slightly pungent by a few drops of spirits of vitrol, and sweetened with

honey. If your correspondent tries it I shall like to hear the result.—B. P. B.]

CAN you tell me the cause of the following evil, and if so, the remedy?

I am an amateur Pigeon fancier, and have, until this season, had very fair luck breeding them. My stock is two dozen pairs, consisting of Almonds, Trumpeters, Barbs, Powters, Beards, Baldheads, and Fantails. I keep two hoppers—one at present supplied with tares, the other with rice; they prefer rice to anything. I have tried beans, peas, barley, buckwheat, and maise. They are kept in a loft, but fly out whenever they like (never fastened in). They have pump water, the same as is drunk in the house. The old birds all the season have seemed to have bad influenza colds, otherwise very healthy; but the young ones die at all ages with a swelling in the mouth or throat. It is not like canker, for it does not break; it is more like a tumour, quite hard, and, when cut open, yellow inside. Of course they are starved. The old feed the young as they get worse on salad. Last week I lost ten young ones, the week before seven, and one week in the spring sixteen—all I had. I have gone through all the old birds twice carefully, but can find nothing of the kind the matter with them.—J. S. A.

[Poultry on board ship fed on rice have a similar disease. Give it up. Do J. S. A.'s Pigeons have salt? and is their water given them in a tin or zinc vessel?

Wash the old birds' heads with a solution of borax, and let them have access to salt.

The young ones are suffering from canker, little can be done for them. In a few cases, perhaps, the lumps of pus may be picked out, and the sore place touched with caustic; but with young birds it is difficult. If the old are cured the young may, perhaps, not be attacked.

Some fanciers assert that giving Pigeons water in a metal or tin vessel will cause canker, others attribute it to foul water.—B. P. B.]

THE PIGEON TRADE OF MICHIGAN.—We learn from the *Grand Rapids Eagle* that there have been shipped from that place alone—to say nothing of the large quantities shipped at other places in that region—588 barrels, or 108,555 lbs. of wild Pigeons during the past season. The *Eagle* estimates the total number of Pigeons shipped from that port of Michigan at between 1,000,000 and 2,000,000. The freight paid on Pigeons at the *Grand Rapids Express* office during the season amounted to 3488 dols. 97c., and the Pigeons sold for about 25,250 dols.—(*Boston Cultivator*).

FEEDING BEES—BEE-BOXES.

EVERY bee-keeper in the United Kingdom should lose no time in ascertaining the weight of all stocks or swarms intended to stand the winter, and immediately supply the deficiencies of Nature. Where these precautions are neglected no one need expect anything but desolate hives and a depopulated apiary in the ensuing spring.

Of all the various modes of feeding bees (and I believe I have tried every one in turn), I find none so good as that recommended by M. Hermann, who says, "The feeding is always done best from above with an inverted bottle, the mouth of which is tied over with a small piece of lace-net," or *toile*, as it is rendered in the French edition.

My bees have had above a hundredweight of food this autumn all administered in this manner, with a much smaller amount of excitement, and consequent waste, than when given in any other way.

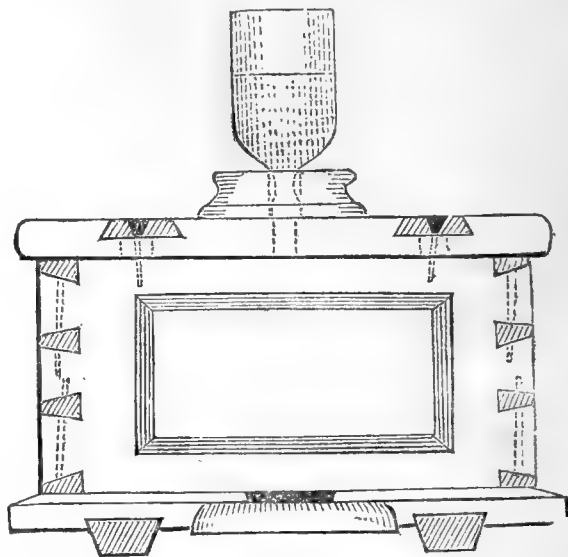
The following sketch, which is drawn to the scale of an eighth of an inch to an inch, shows the manner in which I have applied this mode of feeding to flat-topped hives in which the central aperture is not adapted to receive the bottle-neck.

With straw hives, all that is necessary is to withdraw the cork which usually stops the central aperture, and insert therein the neck of the bottle, which will be rapidly emptied. If no aperture exists, one can be easily made with a sharp penknife.

It also delineates the bee-boxes used by me, as well as the mode in which they are constructed.

These boxes are made of one-and-a-quarter-inch yellow pine throughout, dovetailed together, and the dovetails pinned through with No. 8 iron wire in the direction indicated by

dotted lines. The top and floor-boards are "keyed," to prevent warping, and the former is secured to the box by four screws, which pass through the keys and the board itself. The holes in the latter through which they pass are made so large as to admit of the wood swelling and shrinking freely without thrusting out or contracting the back and front of the box.



There is but one window, which is placed at the back, and is of the size indicated by the moulding (a five-eighth astragal). The interior dimensions of the boxes are 13 inches square by 7 inches deep, and at the top are eight bars placed at equal distances from each other.

The recent unprecedentedly wet season has caused a very great accumulation of moisture in wooden hives. I have already transferred most of my stocks into dry boxes, and shall probably be compelled to shift the whole before long. In this respect I would recommend all who keep bees in wooden bar-hives to follow the example of—A DEVONSHIRE BEE-KEEPER.

P.S. Six pounds of lump sugar dissolved in four pounds of water, and boiled for two or three minutes, form very excellent bee-food.

OUR LETTER BOX.

CROWING HEN (*Subscriber*).—Your hen has become a hen-cock, and if you examine her narrowly you will see an increase of size in her comb and gills, an inclination to fall over in the long tail feathers, and unusual growth and alteration of hackle and saddle. All this is caused by derangement of the egg organs. She will always be useless, she will get worse instead of better, and will end by becoming a positive nuisance. We advise you to kill her. There is an old proverb,

"A whistling woman, and a crowing hen,
Are worthless nuisances to men."

You will have seen what we said about wintering Pelargoniums and Calceolarias.

ROSELLA PAROQUETS.—"M. G." wishes for directions for their management, and we shall be obliged by their being sent to us by any of our readers. We knew a Cockatoo which left off pulling out its feathers and eating them, as soon as it was supplied daily with a dish filled with water to bathe in.

BELGIAN CANARIES.—"H. P. J." is informed Mr. W. Young, 128, High Street, Oxford, and Mr. J. Eton, High Street, St. Clements, Oxford, are both Belgian Canary breeders, and would give him any information he needs.

RABBIT MANAGEMENT (*Youngster*).—Their manure may be applied to rose trees, or any other garden plant if properly managed. A doe Rabbit will breed at five months, sometimes earlier; but where good stock is wished for, six or seven months is quite early enough. A buck may be used at six months old. Rabbits fatten easily on oats, bran, carrots, oil cake, sow thistles, &c.; but to eat them in perfection, they should be fattened from the doe—that is, the doe should not be allowed to rear more than four at a time, and should be very well fed on good food, so that she may have an abundance of milk. The young will then be fit to kill at about nine weeks old, and are very superior in flavour to any others.

WASPS (*A Gardener*).—The concise history of the common Wasp is as follows:—Such of the females, or queens, as survive the winter (having been impregnated during the previous autumn), immediately on the arrival of fine spring weather commence building a nest, and making comb, in which they deposit eggs which only produce workers. These as soon as they arrive at the perfect state assist their parent in making more cells, the colony increasing in strength and size through the summer. In the early autumn, male eggs are deposited, and some of the workers' or female eggs (by a peculiar treatment which nobody has yet described satisfactorily), are developed into fertile females or queens, which immediately pair with the thin, long-bodied, and long-horned males, which are produced at the same period, which latter die immediately afterwards. The red-coloured insects found in some of the cells, are parasites known by the name of *Ripiphorus paradoxus*, which, having devoured the grubs of the Wasps, undergo their transformation within the cells. Should you find any more comb with these parasites in it, please to forward portions of it to J. O. Westwood, Esq., Taylor Institute, Oxford, for his careful investigation.

WEEKLY CALENDAR.

| Day of M th | Day of Week. | OCTOBER 23—29, 1860. | WEATHER NEAR LONDON IN 1859. | | | | Sun Rises. | | Sun Sets. | | Moon Rises and Sets | | Moon's Age. | Clock after Sun | | Day of Year. |
|------------------------|--------------|---------------------------------|------------------------------|-----------|-------|-----------------|------------|------|-----------|------|---------------------|----|-------------|-----------------|----|--------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | | | | | |
| | | | | deg. deg. | | | m. | h. | m. | h. | m. | h. | | m. | s. | |
| 23 | Tu | Wood pigeons come. | 29.424—29.346 | 41—17 | N.W. | — | 40 | af 6 | 49 | af 4 | morn. | | 9 | 15 | 37 | 297 |
| 24 | W | Golden plovers come. | 29.623—29.401 | 40—23 | S.W. | — | 42 | 6 | 47 | 4 | 54 | 0 | 10 | 15 | 45 | 298 |
| 25 | Th | Snipes come. | 29.473—29.034 | 53—40 | E. | ·80 | 44 | 6 | 45 | 4 | 4 | 2 | 11 | 15 | 51 | 299 |
| 26 | F | Tortoise buries. | 29.664—29.161 | 48—23 | W. | — | 46 | 6 | 43 | 4 | 11 | 3 | 12 | 15 | 57 | 300 |
| 27 | S | White duck comes. [AND ST. JUDE | 29.829—29.803 | 44—29 | S.W. | ·04 | 47 | 6 | 41 | 4 | 18 | 4 | 13 | 16 | 3 | 301 |
| 28 | SUN | 21 SUN. AFT. TRIN. ST. SIMEON | 29.786—29.361 | 53—29 | S.W. | ·20 | 49 | 6 | 39 | 4 | 28 | 5 | 14 | 16 | 7 | 302 |
| 29 | M | White Poplar leafless. | 29.407—29.318 | 55—28 | S.W. | — | 51 | 6 | 37 | 4 | rises | | ○ | 16 | 11 | 303 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 55.4° and 38.1° respectively. The greatest heat, 68°, occurred on the 24th, in 1833; and the lowest cold, 23°, on the 29th, in 1842. During the period 114 days were fine, and on 117 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

Artichokes, cut down any remaining flower-stalks, remove a few of the large outer leaves, and cover the roots with dry litter or old tan. *Beet*, take up the roots carefully, and, having cleared them of leaves, preserve them in sand in the same manner as Carrots. *Broccoli*, the Cape varieties that are now heading to be secured from frost. *Lettuce*, give air to the plants in frames at every favourable opportunity; the Cabbage varieties intended for winter use will not require it so freely. *Parsnips*, although they keep best in the ground, it is sometimes more convenient to have them taken up and stored in the root-cellar. *Rhubarb*, clear away the decayed leaves, and cover the crowns of the roots with old tan, or any sort of loose litter. *Scorzonera* may now be taken up, as also *Salsify*, and preserved in sand.

FLOWER GARDEN.

Early attention to be given to all plants that will require protection from the severity of the winter. Auriculas to be protected from heavy rains, but to have all the exposure possible to light and air. Examine the drainage. If the surface of the pots assume a mossy appearance, water to be given sparingly. The laying out of new grounds, or improvements in old ones, which may be in contemplation, should be proceeded with as soon as we are favoured with fine open weather. Continue to clear off all decayed and frost-bitten plants from the flower-beds, and plant them with Tulips, Hyacinths, Anemones, Narcissi, Ranunculuses, &c. Double Primroses, Wallflowers, Double Rockets, Hepaticas, Iberis, Arabis, Aubretias, Alyssum, and other such spring-flowering plants may be planted in masses in the beds; thus imparting a cheerful appearance during the winter months, and producing a gay effect in the spring. Canterbury Bells, Sweetwilliams, Foxgloves, Columbines, &c., to be planted out in the borders. Examine the stakes and ties of plants. Forward all preparations for planting evergreens; lay turf; keep the borders and walks clear of leaves. The leaves collected in a hole, and some sand mixed with them will form an excellent substitute where peat mould is scarce.

FRUIT GARDEN.

Continue to look over the stored fruit occasionally, remove the affected. Go over the out-door Vines, removing all the laterals that may have been left on the strong shoots, and two or three of the joints of the young and immature wood to be pruned off. Every facility that can be afforded should be given to the ripening of the young wood of wall fruit trees this season. Prepare for making new plantations of Gooseberries, Currants, and Raspberries. To insure a regular and an abundant produce of fruit, it is advisable to grub up a portion of the old plantations every season, and to supply their places with younger trees. Look over the trees in old orchards, and remove any that may be considered worthless or worn out. Prepare some good soil for planting other varieties.

STOVE.

Little moisture will suffice at this period for the general stock. Keep the temperature progressively on the decline, more especially in dark weather. Ventilate freely whenever the weather will permit.

GREENHOUSE AND CONSERVATORY.

Fire heat is now sometimes necessary to remove all superabundant moisture by ventilation; but this application of heat must be used with caution that it may not interfere with the system previously advised of gradually reducing the temperature to correspond with the natural decline of solar heat and light. Keep Cinerarias cool and moist; repot such as require it; fumigate as soon as green fly appears. Primulas to be treated in a similar manner. Look carefully after the red spider on tree Violets, Bossiasas, Chorozeas, and other such plants that are liable to be infested by it. If the Camellias are allowed to suffer for want of water it is very probable they will drop their flower-buds.

PITS AND FRAMES.

Attend to the potting of such cuttings as are sufficiently rooted, and give them frequent attention to get them well established. Abundance of air and light must be admitted to those structures. If any of the lights, from an accumulation of dirt thereon, give a partial shade to the plants, take them off, and wash them thoroughly without delay. Be careful during the operation of watering to apply it to those only that require it. Remove all mouldy and decaying leaves, and keep the interior as dry as possible during the winter. If any of the plants are suffering from mildew apply flowers of sulphur immediately, before the plague spreads over the whole pit or frame.

W. KEANE.

WINTERING VERBENAS.

OTHER fancy ways of using up extra plants in the flower garden, after the regular beds are all filled in for the season, might be mentioned by the dozen and the score, but for the present let us confine ourselves to the text which this season has thrust upon us.

Last week a decree, like the laws of the Medes and Persians, was issued in one of the experimental gardens to the effect that so many and such kinds of the brightest and strongest growers of the Verbenas should be taken up and potted, be staked and tied up close to the stakes, and the pots to be then placed behind a certain pit where the sun could not get at them, but where they would otherwise enjoy as much light and free air as when they stood out in the flower-beds. Now, anybody who has begun gardening for the last twenty, or five and twenty, years might exclaim, on reading of such a decree in a free, enlightened country like ours, "Oh, what a mad trick! and how dearly they will have to pay for their whistle! Who will follow the daft mandate?"

Who indeed! and, yet, will you believe it—the thing has been done a thousand times over? In 1832 I had *Verbena melindris* the first, and the dwarfest of the bedding

Verbenas, up to five feet high against a seven-foot stone wall. The plants were twice lifted in the preceding October; but at that early period in their history many Verbenas were kept in pots, just as we now keep Geraniums of sorts—that is, from year to year, and after a hard, close ball had been made that way, sufficiently hard to stand anything, the entire ball would be planted out without disturbing it. Then, at the end of the season, it was no more difficult to remove one of these plants and balls from the border to a pot than from one pot to another. Now, however, a better order of things prevails for bedders; and to remove a strong-growing Verbena from a flower-bed at the end of the season is about one of the most hopeless things to which a man can set his hands. But the change in the season has made a wide difference for the doing of many things not usually met with in practice, and in no one thing more than in the lifting of old bedding plants of sorts in October and November. One good reason for doing a thing is better than ten lame excuses for not doing that same thing: then, if ten cripples hobble along to oppose my way to Drummond Castle, in Scotland—the best flower-garden castle on the north side of the Firth of Forth—I shall hand them over to some Sandy McFarlen to be dipped in Loch Leven to cure them of lame excuses for the rest of their days, and I shall proceed on to the Castle.

When I was in the height of the fashion, all the visitors from Scotland, or from a tour through it and over it, pressed the fancy works done at Drummond Castle into the fashions for that month or season, as the case might be, and no castle was ever castellated in one's ears like Drummond Castle. And so it was, and went on till one season—I think it was the very dry and very hot summer of 1846—a lady told me the best thing in the flower way then in this island was the Verbena-covered wall or walls at Drummond Castle (there are many walls in that garden—terrace walls—some very high, some not quite so high, and some high enough to be covered with Verbenas in full bloom and as close as Ivy), and a good deal more of it, and how it was done and could be accomplished, and ever so much about it. The upshot of it was that I should become one of the garden correspondents of Drummond Castle. I did, and we exchanged fancies and fairy tales. But what I was going to tell you was about that decree for taking up the largest of the Defiances, the Mrs. Woodroofs, and such genuine outstretchers, to do the thing which was so much talked about at that time as being the fancy fashion in one of the best flower gardens then in Scotland. They are up, and potted now, and standing behind that pit, with long rails or boards leaning over them, and mats at hand to throw over all on clear nights or on frosty evenings; and so they will be, and be more to the purpose till the thermometer drops to 25° on the scale, if it were not to Christmas-eve.

There is no other way one-half so good as that for getting large, half-hardy, succulent, softwooded plants to change from the free ground to the confinement of a pot or box with less risk and more chances of success. Keep such plants after potting them out of all kinds of pits and frames, cold, warm, or medium, from everything called a plant-house, or back shed, or potting-bench, and you will do well and never repent it. Dahlias would move like anything, and more easy than most things, if they were done like those Verbenas, and bloom on till hard upon Christmas; and if you want a card for that, Mr. Moss did the thing over and over again at another castle never famed for flowers, but always spoken of for the terrace Aloes and the Dahlias in pots when others had theirs in the cellars—that was Eastnor Castle, at the other end of the Malvern Hills, in Herefordshire. Huge *Salvia splendens* have been done the same and many others; and this very month I have taken up two *Salvias* which were sent to me in the spring from the Messrs. Low, of Clapton—one *alba cœrulea*, which has shown no

sign of bloom, and one *cacaliaefolia* coming into bloom with branched upright spikes of blue flowers.

By keeping the sun from such large plants when they are lifted in the autumn, and giving them all the light and freedom of open air and an out-of-door protection for a while, they will establish themselves much sooner than by any other means known to us. But settle the point to your own satisfaction, and I shall settle the use of it. Pot two *Pompones* from the border any time this autumn, or two anything like them you might wish in preference, and put one of the plants under cover, as in a greenhouse, or orchard-house, or vinery, or Peach-house, at rest, and leave the other out of doors and behind something not much higher than itself, only that it keeps off the sun when we see it, and my word for it you will find the out-door plant the best of the two, and the soonest established in the pot. Recollect, however, this does not apply to all kinds of plants, only to such as are very strong, soft-wooded, and with large leaves; also such as are very difficult to get established into pots, as Verbenas and *Heliotropiums*. I took up a third *Salvia* at the same time as the two just mentioned, and put it under glass immediately—that was *Salvia tricolor* of the “*Illustrated Bouquet*,” which was sent with the rest from the Clapton Nursery. It made a most beautiful little bush, and shows the very best habit of all the family of the half-hardy race, but did not bloom. At first, and from the published figure of it, I took it for a variation of *Salvia chamædryoides*; but after a couple of months in the free soil of the open border, no two plants were ever less alike one another than *Salvia tricolor* and *Salvia chamædryoides*. But both of them are so hard and wiry in their growth, and so small in their leaves, that they would lose time if they were left out of doors after potting from the borders, like the great growers and the most difficult removers.

So much for that part of the play. The next turn will show that we have not experienced such another season for the last five and twenty years for the safe removal of old Verbenas from the beds; and although I am only going to adopt an old fashion, as all the people of fashion do at the intervals of so many years, others will find to their cost, and some have found it already, that they must adopt my plan, from sheer necessity. What is to me a mere fancy trick, is to them, and such as they are now placed, a matter of life or death. Half the cuttings of Verbenas, after being struck, have been lost or all but lost by the slug. Some of the kinds did not strike kindly; and some, which did seem to carry along with them the nature of the parent plants, under great difficulties. They, the parent plants, would not do, and could not grow in very many places; and the cuttings from them have inherited the plague and misfortune, and tens of thousands of them will be lost this winter in the face of all the science and practical skill of the age. Mark my words well; I am old enough to know how the tune is going, and I know the kind of “oil” to keep the instruments from taking fire, from creaking, and from giving false measures and shortcomings. Do as I do, therefore, but do it for a very different purpose, and to make both ends meet at the end of next March. If you have lost so many of your Purple King cuttings, as some of the Londoners have done, or your Queens, Emperors, Stars, and Blue Bonnets, you are still on the safe side of the ferry. Do as I do, but do it to keep people from quizzing you on your bad luck. Take up so many of the old plants of all the sorts in jeopardy—they, or the like of them, were not in such a good condition for lifting for the last quarter of a century; and if you do them just as I say, and keep them out of those cold or hot pits of gardening as long as possible, you will find no more bother with them than with young Tom Thumbs.

The reason why Verbenas and other old plants in beds are so much easier to lift this season is this—their roots have never made such slow progress in the soil as they

have done this season, and, consequently, there is not the tenth part of the risk in lifting them as is usually felt. Indeed, I have seen cases lately in which the plants are in a much better state for potting than when they were planted out last May. But I have cases in point. I received in the spring a large assortment of Verbenas, two or three of a kind, to make up an arrangement of colours as they were classed in *THE COTTAGE GARDENER* at the time; also three dozen of nice plants of *Verbena melindris*, for the edging of a mixed row of variegated *Alyssum*, *Lobelia speciosa*, and *Verbena melindris*, an edging of which I had heard much, and of which I anticipate as much more. As soon in September as I perceived that nothing could be learned from all these, instead of bothering with cuttings of the different sorts, I ordered the old plants to be all potted, and to be kept over till the spring, and to do them so healthily as could be done, so as to get sound cuttings from them early in the spring to make another start. Well, all these were lifted, potted, and managed in the shade in the open air, just as I have suggested above, and now you never saw a more healthy or a more bushy lot of Verbenas than they are. The lifting of these, and the style of their looks and new roots in the ball, opened my eyes and suggested the far-fancy from Drummond Castle, or something that way; and if it should go no farther than to gratify a mere curiosity, it will teach a useful lesson. And, although we have all of us in *THE COTTAGE GARDENER* set our faces against the system of lifting such things in the autumn instead of making cuttings from them, you now see there may be occasions and fancies for which the plan is useful after all; but sheer necessity will make it imperative in many places this season, and we must not lose sight of the fact that the thing can be done if we go the right way about it. Just look at my own fancy—a score of old Verbenas of the Robinson's Defiance potted in 48-sized pots, trimmed of side-shoots, or the side-shoots spurred into one joint from the main stem, and that stem tied upright to a neat stake. Why, the whole thing will not take up more room than the pot would need with a little Tom Thumb in it.

No plant under glass is more easy to keep than an old Defiance, provided you keep it as cool and as damp as a bedding Calceolaria, so that neither fly nor red spider can get a suck at it the whole winter long. Look at it again in March after lots and lots of the best cuttings under the sun are made from it; you have only to turn it out of the pot into a cradle-bed at the back of the Calceolarias, and then think of cutting a dash with them next season and for ever so many seasons in succession, in some way or other that is out of the common, and people will take you for another Solomon. Suppose you were to plant them at two feet apart in front of the greenhouse, and train them against the wall like Currant bushes are against the walls in the kitchen garden, no one could say but that was a good hit. Or, if you put some of them round a rustic basket, and nail the long trailing shoots to the outside of the basket at once, and let the rest of the season's growth take its own way, no wind could blow them out of place, and no one could say another such sight was ever seen. But do them your own way, and when you cannot overdo them.

When the Shrubland Rose Petunia was young and not much about, I used to have it over four feet high, and spread and trained against a low terrace wall, where everybody was in raptures with it; and I am satisfied that was one of the good reasons why it got about so soon over the three kingdoms. But it is done for now. The new one called Lady Emily Peel, and which is now advertised by the Messrs. Henderson, of the Wellington Road Nursery, is the best of that race. I saw several large plants of it in bloom when I went to see the bedding Tulips last spring, and there can be no mistake about it. But, forgive me for the thought, I wished it were at

Jerusalem, or further on in that direction, for eclipsing my favourite of all my seedlings and the pride of my stud; but so it is, and such is human nature when we come to self.

Talking about Petunias, they say there were none this season; but here at Surbiton thousands have seen a most abundant bloom of a good, common, purple kind of Petunia, which was thickly trained over the bars of a balcony facing the railway, at the Railway Hotel—nothing of the kind was ever done better. Over the Petunias were six or seven hanging-baskets for Tom Thumbs and Calceolarias, and behind the Petunias a bank of mixed plants in full bloom the whole summer. The place is much sheltered, and is open to the full sun. Now, those old Verbenas would have been just the thing for such a place. One might plant them in long, narrow boxes, and so train them over the bars of a balcony as to make a hedge at once as bright as the tail of a comet, and so thick that a robin could not face it or get through it anyhow. Heliotropes in time come to be as tall as pillar Roses, and they, too, might very well be thus managed and used, and now is the time to begin that part of the game. They are, however, the very worst plants in the garden to lift, their long dark-looking roots are as free from fibres as fiddle-strings, and as difficult almost to break into small fibry roots as strands of copper wire. Still, although I have not tried them this season, I should think they are as far back in the roots as Verbenas, and good beginnings could be made with them if they can be at all moved from the open ground.

But, to tell the truth, necessity is at the very bottom of all this, and necessity is the mother of more things than inventions. There is no invention about all this talk, and yet it comes of necessity; for I quite forgot, till the last *COTTAGE GARDENER* came in, that this was the last day and the last hour at which I could write for the next issue. I thought I should come out next year with a new fancy, that none of them over the borders had heard of the Verbena walls at Drummond Castle, and that Kensington Gore could not show the beat of it. But having gone so far, I may as well make a clean breast of it, and tell that "how" for the last three weeks I had been employed, at all the spare moments I could catch, on an entirely new scheme, and such a scheme as I never heard of before; indeed, some would call it an invention, but all I can say is, that it came of necessity.

Well, I had very hard upon so many thousand seedlings this season, and not one of which had showed a single bloom, or a double one either, till about or after the middle of September; but the turn to sun and dry weather on the 1st of October set scores of them up in bloom-bud like Tulips after a rainbow, and what was to be done? There was no chance of seeing one of these open this autumn out of doors; it was against the grain to be compelled to winter so many after being up so far to the point of proof already. Snow was reported from the north, and the evenings were chilly cold. Then it struck me all at once to do the flower-showing ones on the very plan about old Verbenas; and of all the things I ever took on the spur of the moment, this has paid, and will pay me the best. Grand discoveries are coming in every day, I shall get all the "shows" to open bloom, and prove them after all. First of all I went over those that were showing for bloom, and cut off all the side-shoots to one joint before lifting them, then cut off all their bottom leaves, and all the old leaves near the top, and leaving half a dozen, more or less, of the young leaves near the top. Young leaves, in all kinds of plants, being only about one-fourth so stressing on the roots as old leaves. Then with a steel fork I lifted their roots with little hurt, potted the plants in all-but-leaf-mould-like compost, and after that the same treatment as above with Verbenas; but as soon as the leaves could stand firmly up, the pots were removed under glass, and the result is the gratifying news of a prosperous issue.

D. BEATON.

CULTURE OF FERNS IN BASKETS.

I AM glad to observe that my communication in your No. of the 25th of September has attracted the notice of Mr. J. A. Summers on the subject of growing greenhouse Ferns in baskets instead of earthen pots. But I think we scarcely understand each other, as I was quite aware there was no novelty in the use of wide suspended baskets for the purpose, and very pretty these are. My idea, however, was, I think, an original one; for I had no where seen what, for distinction's sake, may be called basket-pots, of precisely the form of the common brick ones—not necessarily suspended at all, but by me ranged on shelves, either with or without saucers. To my view the appearance infinitely surpasses a collection of dingy red eyesores, and your correspondent quite confirms my statement as to their superior suitability for the intended object; for not only are Ferns more healthy, but I believe other plants would be equally improved if placed in them. I am well acquainted with what have been facetiously called crinoline baskets of galvanised wire, and these are very well in their way, but do not come up to my idea of pots at all, for my purposes, at least, and are somewhat more expensive. I gave a common garden-pot to a basket-maker, and desired him to make the same thing in wickerwork, to be painted inside and out—green, I think, looking best; but this is a matter of taste. My first specimens were somewhat more costly than I liked, but that difficulty was got over by putting the work into the hands of the blind operatives in this line at the dépôt for the sale of their productions, established by the “Association for Promoting the General Welfare of the Blind,” 127, Euston Road, London, N.W. Not only was it well and cheaply done, but I had the satisfaction of knowing that I had introduced amongst an unfortunate class of fellow creatures a new description of articles of a simple kind, which could be made at their own homes. This Institution well deserves support, and all information may be obtained on application to the intelligent superintendent, Mr. W. H. Levy, as above, who will know them under the designation of “basket Fern pots.” Those hitherto made have been of five-inch size; but any gardening pot left as a guide will be imitated as to dimensions, prices varying according to circumstances.—T.

TROPÆOLUMS—GAZANIA SPLENDENS.

BEDDING-OUT PLANTS NEAR CLAY CROSS.

I HAVE just read Mr. Beaton's article on *Tropæolum* and *Gazania splendens*, and can fully bear out his remarks about pouring cold water on splendens. I will give a case in point. Calling in August at a certain nursery where everything appeared to be done well, I was asked, “Do you know anything of *Gazania splendens*?” “Yes, I know it very well. It is one of the best things I know.” “Well, what difference is there in it and *rigens*?” “A great deal; it is larger, better formed, broader petaled, has a beautifully marked ring round the petals, and a clear yellow centre, while *rigens* has a dark disc or centre.” “Well, come here and look. These I have bought from Messrs. Hendersons, and planted them in the same bed, and here they are. Now, where is the difference? It is only humbugging the country, for this thing has been here for years, and we have sold it for *rigens*.” Sure enough, it was splendens in its glory for the season, the whole bed! I only remarked that his customers need not grumble if they had been receiving that for years instead of *rigens*; and I should like to know why, if he had the opportunity, he did not embrace it before Messrs. E. G. Henderson. I feel assured, that those who have it true will not say they humbugged the country, but they deserve all they have gained by it for bringing it before the public. It has not done here so well as some other places, the season has been against it. Cold rains and blustering winds on these bleak hills have prevented all things doing as they should have done. We have not had one entire week of fine weather during this summer.

Of *Tropæolum elegans* I can prove that there is more than one variety in the trade. There is a bed here of the variety called the Crystal Palace one. The plants were raised from cuttings late in the spring from plants received from Mr. Summers, and, notwithstanding the fearful weather we have had, it has been a perfect mass of bloom from the middle of June, and is the only thing which has done well and stood the weather, with the exception of our seedling *Petunias* which have been and are now a sheet of bloom—viz., William Lindley, dark-speckled purple

and puce; Jenny, white, violet throat; alba magna, a large white, in the character of magna coccinea, with one or two others. But I am leaving elegans. We received a plant of one under that name from another place, and it is the worst variety of *Lobbianum* I ever saw. I would, therefore, caution purchasers next season to see that they purchase only of growers who will warrant the best or true kind; for it would be waste of money and cause disappointment, and Mr. Beaton would have enough to do to quiet the grumblers, if they received such a worthless thing as I am alluding to.

I was not aware until I read Mr. Beaton's article that *Lobbianum* is difficult to manage in blooming during the winter. I used some seven or eight years since to have at all times plenty of it to cut for bouquets; and I wanted plenty where I then lived to supply our customers. I grew them the same as I shall do this winter a plant or two of elegans. They have been growing out of doors all the summer in a 48-sized pot. The wood is short-jointed, hard, and ripe. You would say it was stunted in growth. It is now under cover; and as soon as a new bed of fermenting material is made up it will be plunged in that after being shifted into a 24-sized pot, when it will commence growing and flowering the whole of the winter and spring. I know a nobleman's gardener who is adopting the same plan.

And so, after all Mr. Beaton has said, and people being almost crazed about obtaining the Trentham Scarlet, or Crystal Palace Scarlet, or Beaton's Seedling Scarlet Geranium, &c., it has all ended in a bottle of smoke, or, to use the words of a contemporary, “it is as old as the hills;” but, if I mistake not, that writer is the same person that brought Tom Thumb before the public in the first place. Now, if my supposition is correct, will he be kind enough to say who was the raiser of Prizefighter, which, he says, Crystal Palace Scarlet is? Or will Mr. Beaton say if he ever sent or knew of his seedling ever being sent to Heckfield? or will Mr. Cole, who I know was at Shrubland some years since, say what he knows of the origin of it? And will Mr. Fry give us any information as to where he obtained his stock in the first place? I find the same authority claims the honour of sending it to Sydenham in the first place, and then informs us that a certain party has sent out hundreds of Prizefighter instead of Crystal Palace; and that the London trade has sent out thousands of it for Tom Thumb. To my mind it appears plain that it is a first-class thing, from the fact if I had no other, according to “A. P. W.'s” own showing, by the extraordinary demand there has been for it. Our stock of it was small this season; but I know it has done better than Tom Thumb, for that has been a total failure. We planted three times the same beds and yet could not make them grow.

Dahlias here are very bad indeed; we have several hundreds that are not more than eighteen inches high at the present moment, and many will not bloom at all.

Verbenas have done badly. Heliotropes, Calceolarias, Flower of the Day, Bouvardias, &c., the same. The liliputian Dahlias are worthy of being taken in hand more than they are. They bloom very freely, and are very pretty and useful for vases and small beds. Lobelias have not done well; the dwarf *Nasturtiums* have bloomed well; the yellow and scarlet, if grown in pots, will be found very useful for decorative purposes where a variety of flowers are wanted.

I will give you in a future communication a list of Verbenas which have stood best here of the new and old kinds.

I will just say in conclusion that *Begonias* did not do well, the ground being too cold. To-day the thermometer at twelve inches deep in the ground is 49° only, with rain from north and snow seen for the first time.

Scarlet Geranium Vivid will be a first-class bedder. It surpasses in brilliancy any other out of doors this season.—*Pilsby Nurseries, near Clay Cross.*

A REVOLUTION IN WINE-MAKING.—A Professor of Chemistry in Charleston (Dr. Hume), it is said, has discovered a new process of wine-making in which fermentation is dispensed with, and the Grape juice changed in the course of forty-eight hours into a delicious wine, containing all the natural sweetness, flavour, and aroma of the fruit, and requiring neither sugar nor brandy to make it palatable. So completely and accurately are the characteristics of the Grape retained in the wine, that we are able at once to determine, on tasting, from what variety the juice was obtained.—(*Prairie Farmer.*)

HEATING A GREENHOUSE WITH SMALL OUTLAY.

I HAVE made a span-roof house for wintering bedding-out things in, out of eight top greenhouse lights. Size sixteen feet by twelve feet. I screwed the tops of the lights together, and the bottoms of same rested on a sill of wood supported by four uprights. Between these I filled in with wood hung on hinges, which act as ventilators. The walk is about fourteen inches below the ground surface; south end, glass; north end, door in centre, glass each side; the sides of the house about two feet high. It is well fitted with shelves from top, sides, &c., for the small bedding plants which will be placed in it. Fitted with shelves about three feet wide each side of walk, about the level of bottom of lights. In fact, it was made out of all old materials for cheapness; but, notwithstanding, having been well painted and glazed, it is now a first-rate little house. How can I heat it cheaply and durably? —RUHTRA.

[If you can sink a hole in the ground at one end of your house some three feet and a half or four feet deep, we would make a stoke-hole there, and take a nine or twelve-inch flue right under the pathway, so that a good broad tile of twelve or fifteen inches wide would form the top of the flue, and the top of the path. The small chimney might be at the other end, or you might make the flue narrower, and return it to the same end, so as to have furnace and small chimney together. If you consult economy and durability, we believe this to be the best under the circumstances. Some time ago, Mr. Fish noticed a house at Mr. Hall's nursery, Hitchin, so heated, and nothing could answer better. You would, in late numbers, see various other modes alluded to.]

PEAR TREES AGAINST A WALL UNFRUITFUL.

"Against a wall twelve feet high, and facing the S.S.E., I have five Pear trees. They have been planted about ten years, and now cover the wall. When first planted they bore pretty well, but for the last four or five years they have had very little blossom, and that at the extreme ends of the branches. This year there are four Pears on the five trees. I notice the bark is more or less covered with a brown scale, giving it something the appearance of the hide of the rhinoceros. The Pears are of different kinds, and the subsoil is clay. What am I to do to make them bear? Of course, their covering the wall has an ornamental appearance; but I would cut them down if necessary. My trees not having any blossom led me in the spring to observe carefully others that were fastened to walls or buildings, and I could scarcely find a tree of any age that had blossom except at the ends of the branches. This is never the case with standards; and I noticed where a tree had been neglected, and the branches had got away from the wall, those branches were covered with blossom."—R. U.

THE chief advantage that Pear trees on a wall have over others planted as standards, is the greater degree of warmth they there receive. This advantage generally causes the fruit to come larger and finer in appearance, though not always superior in eating qualities to the smaller fruit, of kinds hardy enough to bear on dwarfs, pyramids, espaliers, or standards. One reason why such Pear trees frequently bear best on the extreme ends of the shoots when fastened closely to walls, is the comparative smallness of the shoots there, and the comparative thinness of the spurs, which permits of the sunlight playing as freely upon them as upon branches standing out as you state from the wall, and thus having most of the advantages and disadvantages of a standard tree. Again: as a general rule, the branches of Pear trees on walls are placed too thickly together—say six inches instead of nine, or twelve, or more; and the spurs on these branches are so thick, lumpy, and close, that the sun cannot have access to the foliage on them as on that at the points of the trees. Besides, the Pear is a rampant grower—in many kinds would make a good-sized forest tree; but when placed against a wall it can only expose one side out of four, and most likely the soil is not only richer but deeper than it would have been in any forest. The consequence is, that prune, cut, and foreshorten as you may—and that will go a great way to curtail extra vigour—the richness of the soil or the depth of the roots will so supply an extra amount of watery sap, that it finds a vent for itself in a superabundance of summer shoots standing out from the tree; and these, again, whilst they remain,

keep the sun from the buds and leaves on the spurs. If these were thinned out, and those left had the points nipped out, provided the roots were not extra deep, in a couple of years or so these shoots standing out from the tree would be like the two-year-old shoots at the points of a standard, and from that time and onwards might be expected to be studded with small fruitful spurs, as those that appear on a standard under similar circumstances; but, of course, this plan when adopted deprives the tree against a wall of most of its peculiar advantages.

Acting on the fact you mention, of the points of branches being so extra fruitful, which, besides the ideas shadowed forth above, would seem to indicate that a certain degree of youthful vigour in spurs was desirable, instead of having them very old, and hidebound, and gnarly, so that the sap could not pass freely through them; and when, besides, we had reason to believe that the soil was neither too rich, nor the roots too deep nor in unsuitable soil, as the summer shoots were, on the whole, rather short and short-jointed too, then we have adopted several plans for letting more light in to the tree, and also renovating gradually the spurs and bearing wood.

First. We have thinned out the spurs considerably, leaving the youngest and best-placed buds; and when from the cuts fresh shoots came in summer, we nipped them in when four or five inches in length, cutting them close home again in winter, and by this means gradually renewed the spurs on the trees and kept them much thinner and opener than before.

Again: if the tree was in good order, but otherwise the young wood every season was rather rampant, and yet the spurs were unfruitful and presented a gnarled appearance. In a fan-trained tree, where the branches were rather thick, I have removed every alternate branch, and from those left selected a young shoot every two feet that was best situated for the purpose, and fastened it in the open space between the branches; and in the second and third years these bore profusely. The same plan might be followed without cutting out branches, by removing most of the old spurs and tying these young shoots backward on the branches. If the tree is at all strong, this tying backwards towards the stem or roots will have a tendency to lessen rampant growth and make the shoots more fruitful. When a tree is trained horizontally, the young shoots may either be trained between the branches in a similar way, or the young shoots from the upper shoot may be brought down a foot apart and fastened to the next main branch. These modes will be often very successful in promoting extra fruitfulness when there is reason to believe that the roots are not too deep in an unfavourable subsoil, or in a soil that is rich to excess with organisable matter.

If your trees are in the habit of making shoots in summer several feet in length, and these long-jointed and almost as soft and pliable as Willows, then I would come to the conclusion at once that a number of roots have got down into your subsoil of clay; and if so, all the above means will only be palliatives for a time, and will do but little to remove the great cause of unfruitfulness. Even allowing the shoots to stand out from and hang from the wall will only give you a better chance of obtaining more inferior fruit. Whilst saying this we fully admit that disbudding and foreshortening in summer will enable the sun to do more with the watery juices that gorge the tree, and thus too lessen the vigour of mere growth, but the great cause of the evil will remain untouched.

In such a case the chief remedies are either taking up and replanting the tree nearer the surface, or cutting all the roots in a semicircle four feet from the tree, and so undermining it as to get at all the roots, and cut them that are running most likely straight down far into the clay.

With trees at the age you mention I would not hesitate to adopt either of these courses. If the roots are merely cut, stones and brickbats should be placed under the stump where the tap roots were, to prevent them growing downwards easily again. The ends of the roots should be cut clean, and some fresh light loam placed round them to encourage fresh rooting. This would be easier done than taking up the trees wholly; but if it could be done at the end of October, I would rather prefer the latter mode—cutting all tap roots, and planting the rest not more than nine inches deep, and taking care that the border was not dug too deep afterwards. In this case a little fresh loam and leaf mould might be packed among the roots, which would encourage fresh fibres near the surface.

I mention this treatment for trees not planted above ten years. When trees have been planted twenty years or more, and get out of bearing from this cause, sometimes a cutting of the tap-

roots will bring them into bearing in a couple of years ; but there is a danger, if the spurs were at all stunted, that a number of years will elapse before the trees are again in fruitful vigour ; so much so, that having root-pruned old trees severely that had become unfruitful, from their roots getting deep into clay, and producing a forest of Willow shoots in consequence, I would, had I such a case again, either remove the wood of the tree by some of the above modes a season or two before performing the operation, or I would at once clear out and replant afresh. The trees being old and strong, I killed one in the process of cure, and several years elapsed before the others got into a fruitful state again. I believe I rather overdid it, and gave too great a check to the gnarled spurs. Some of the trees, however, have fruited splendidly since, which, without the hard treatment, I believe would have been guiltless of a blossom or a fruit, except in some very exposed points.

I mention the above case for the consideration of readers and coadjutors. There is no necessity for planting Pear trees for grandchildren or even children now. They may be full of fruit two or three years after planting, if the roots are kept shallow ; and for many years after that they are easy to keep under command, if the tap roots are prevented getting down. And what is wanted in vigour is supplied from top dressings ; and extra vigour is guarded against by pruning the roots as well as the tops according to requirements ; and the effects will be seen in beneficial results in the second season if the operations are done in winter and spring, or in the first season if done early in autumn ; but the same good results will but follow from cutting the roots of very old trees that have been unaccustomed to such management. Some of the roots of the old trees referred to were as thick as my arm, went down as straight as a line from near the collar of the tree, through brickbats, &c., and I do not know how deep into very fine, first-rate brick-clay ; and no wonder they produced a forest of long Willow shoots. In the case of our correspondent, if the same vigour is at all perceptible, I would not hesitate a moment either to lift and replant, or root-prune freely ; but the roots that go straight down into the clay are the fellows that must be got rid of—the mere cutting of the others, if the tap-roots are left, will be attended with little benefit. If there are fruit-buds formed, the operation, if performed early, will not at all injure the crop the following year, as the roots will commence immediately to make fresh fibres. If no fruit-buds are formed, the check at the roots and rubbing off a number of the smaller buds will cause them to form fruit-buds next summer.

If there is nothing of this vigorous growth—if the trees, in fact, make little wood, thin out the spurs, and give a top dressing of leaf mould or very rotten dung. I think, however, that it is most likely the roots are getting into the clay subsoil, and then, unless in excessively hot summers following each other, farewell to fruit worth eating.

As to the scale, you might use Gishurst Compound, four ounces to the gallon, and enough of clay added to make a good paint, cover all over with a brush once or twice during the winter. Clay, sulphur, and soot made into a paint will also smother them up, and the rains will eventually wash the paint away. For such things, we find clay paint itself almost as good as the most learned and crack-named compositions ; but doctors would get little credit for the efficacy of their drugs if the generality of their patients knew how simple and every-day-like were the elements of which they were composed. We shall be glad to hear what you do, and how you succeed with the Pear trees. These matters are of great importance to our readers. This last season has been a bad one for good fruit, but several had thanked me for advising them to replant trees that had been in the ground eight or ten years. In every case there were strong tap roots going down perpendicularly ; and the quantity of crude, watery sap thus supplied was so great, that trees against common walls had no chance of getting it by means of sunlight so thoroughly organised as to be available for fruit-buds. Let the sap of the tree be more oxygenated by its food being absorbed nearer the surface of the soil, and the tree and the sun will have less to do to secure the perfect formation of fruit-buds. Arrest mere rampant wood growth, and the tree will put out its efforts in fruit growth.

R. FISH.

CABBAGE AND CATERPILLARS.—E. F. Tragardh writes to the *American Gardeners' Monthly*—"A few seeds of common Hemp scattered among Cabbage plants will protect them from the caterpillar. Half a dozen seeds are sufficient for an acre."

NEW OR RARE PLANTS.

YUCCA CANALICULATA (*Channel-leaved Adams' Needle*).

Probably a Mexican plant. Flowers sulphur-coloured. In a cool greenhouse it blooms in summer.—(*Botanical Magazine*, t. 5201.)

CATASETUM ATRATUM (*Dark-flowered Catasetum*).

Imported from Brazil by Messrs. Lodiges. Blooms in May. Flowers deep green, striped with purplish brown.—(*Ibid.*, t. 5202.)

BESCHORNERIA YUCCOIDES (*Yucca-leaved Beschorneria*).

Bloomed by Mr. Wilson Saunders, and raised from seed given by Lord Ilchester. Flowers yellow and green tinged with red ; scape of a deep coral red.—(*Ibid.*, t. 5203.)

PSAMMISIA PENDULIFLORA (*Pendulous-flowered Psammisia*).

Called also *Thibaudia penduliflora*. Native of the mountains of Caraccas. Flowers scarlet tipped with green. Requires a warm greenhouse.—(*Ibid.*, t. 5204.)

CRINUM GIGANTEUM (*Large-flowered Cape-Coast Lily*).

It has been called an *Amaryllis*, with the specific names *gigantea*, *ornata*, *candida*, and *latifolia*. Native of the coast of tropical western Africa. Flowers white.—(*Ibid.*, t. 5205.)

CROPS NEAR FROME, SOMERSET—THE FLUKE POTATO.

THE old adage that "without a summer there can be no harvest" has been refuted this year ; for, although it is generally admitted that there has been no summer, yet there *has* been a harvest. And taking into consideration the unusual quantity of rain that fell, with the number of days it rained and the absence of sunshine, it has been a matter of surprise to many that the harvest has been anything like an average one ; still, I believe, it is very little, if any, below the average, and, moreover, has been housed in tolerable condition.

There is one circumstance to be taken into consideration as being conducive to the present favourable result—*i. e.*, the coldness of the soil. If we had had warm sunshine at intervals with the vast quantity of rain we have had, it is very probable the harvest would have had a different termination, as the straw would have been much longer and much weaker, and more liable to be beaten down with the storms that fell during the latter part of July and August. Had it been so, with the continuance of wet and warm sunshine, it would very soon have sprouted in the ear, as is too often the case. But the season was cold, and after May vegetation was of very slow growth, consequently the straw was short and strong ; and from my own personal observation, and from information received from various parts of the country, there appeared to be less Wheat laid with the storms and less sprouted than in the average of seasons.

The grain crops appear to have stood the past season the best of all. The hay crops have been very light on cold wet land. Swedes and Mangold Wurtzel are small on the best of land. The grass for miles together in many places I have seen is a mere nothing ; and farmers and others are serving out hay from their small, and, in the majority of instances, badly made ricks a month earlier than usual. Good useful hay is now £7 per ton, and very scarce.

I will take this opportunity of saying a few words on the Potato crop, as most of them are lifted by this time. I made a few remarks some time ago bearing upon the organisation of a few individuals in different parts of the country, to test the different kinds of Potatoes now in general use, and any others that may come into use, on a much larger scale than is done at the present day. Doubtless many will say, "It is quite unnecessary, we can try our own without any fuss ;" and there the trial too often ends. But to set your readers thinking on the subject, I will state a few facts that have come under my own notice.

Most of your oldest readers will well recollect the diversity of opinions that have been given respecting the Fluke, and yet each one may be true. I purchased a few about six years ago, and they produced such a crop as is seldom seen ; and the consequence was, that nearly every garden in the village had its bed of Flukes. And I planted the same quantity of ground, and some in the same beds, but all in the same aspect, the sun being off it before ten o'clock. The soil was a good yellow loam, with a sandy clay subsoil. My crop was much about the same, and with the same success I planted the same strip four successive years.

My neighbours' crops varied as much as the planters did from each other, but in one in particular whose crop I went to see there was scarcely a marketable Potato amongst them; and he said, "How is it that mine are like this, and yours so fine?" I did not know. His were one good-sized tuber and then from one to four of different sizes grown from it. This was the general complaint, and this is what most of your correspondents have said, "The Fluke is a good Potato, but is liable to make a second growth." Now, this second growth spoils the Potato; and if that second growth can be prevented, then we increase its value; and if by discovering its natural habit, so that it can be planted in a situation that a crop good in quantity and quality can be made all but certain, why not so with others? And I believe the past season has so proved it.

I have been very particular this season to learn all I can respecting the Fluke; and I shall only state what I have seen, so that your readers in their various localities will be able to compare notes with safety. In our own garden—which had six inches of old soil that had been lying at rest for years turned up in the winter, and by the side of a wood, shaded till two o'clock—and making a calculation by measure, there were seven-eighths good: of all other sorts on the same aspect, only one-fourth good. Our next-door neighbour with the ground full of stable-dung had the finest sample I ever saw, and not one-tenth even touched. Neither have his nor mine made any second growth. All other sorts (Early Ashleaved excepted), were as bad as other people's.

I have taken the opportunity of examining the samples on market days; and although they are generally small, yet there is no second growth, and there is only one opinion as to the Fluke crop being decidedly the best, and the only regret is that they did not plant more of them.

I think that the past season has proved that the Fluke Potato will stand more cold, more wet, and more shade than any other variety now in cultivation; that it can be planted with success in situations where other varieties will not thrive; and that, if planted on dry thin soil, it is liable during dry weather to be checked in its growth, and then after rain to make a second growth and spoil the sample.

I trust that some of your readers will at once favour you with their experience, stating the difference, if any, where they have planted in different aspects the while it is fresh on the memory; that some one of your correspondents with the requisite ability will take up the subject in a more systematic manner; and that if there is any truth in the above remarks it may be pursued further with other varieties.—THE DOCTOR'S BOX.

COURTEEN HALL, NORTHAMPTON,

SEAT OF SIR CHARLES WAKE, BART.

THIS massive residence of Sir Charles Wake, Bart., delightfully situated on an elevated plateau, well sheltered by fine timber, is situated five miles from Northampton, three from Blisworth, and one from Roade station on the North-western Railway. The views from the mansion are chiefly confined to the home park, owing to the timber with which it abounds; but from an elevated knoll on the south side of the park, and no great distance from the mansion, where the parish church is also embowered with trees, fine views are obtained of Northampton and the surrounding country. Commodious stables of massive architecture are placed close to the west end of the mansion; and close to and westward of these is placed the very productive and extra-well-managed kitchen garden. On the same continuous line, between the stables and kitchen garden, is placed the pretty cottage of Mr. Gardener, Gardener by name and gardener by trade, and to some of whose plans and systems as detailed in these pages I and others have been greatly indebted. From the cottage there is easy access to the stable-yard, the kitchen garden, and by a narrow, almost-concealed walk to the pleasure-ground in front. A very desirable degree of privacy being given to the garden residence by a broad, massive bank of Laurels, kept cut to a regular height, between it and the main pleasure-ground walk—that height conveying to a certain extent the idea of unapproachableness, whilst it is not so high as to prevent the sun shining on the cottage.

Our friend I hope will pardon this allusion to his homestead, even if I make it the basis of one or two digressions. It is delightful to hear a servant speak so feelingly of the attention and kindness of his employers, so honourable alike to all concerned. In his case there would be no need for suggesting the

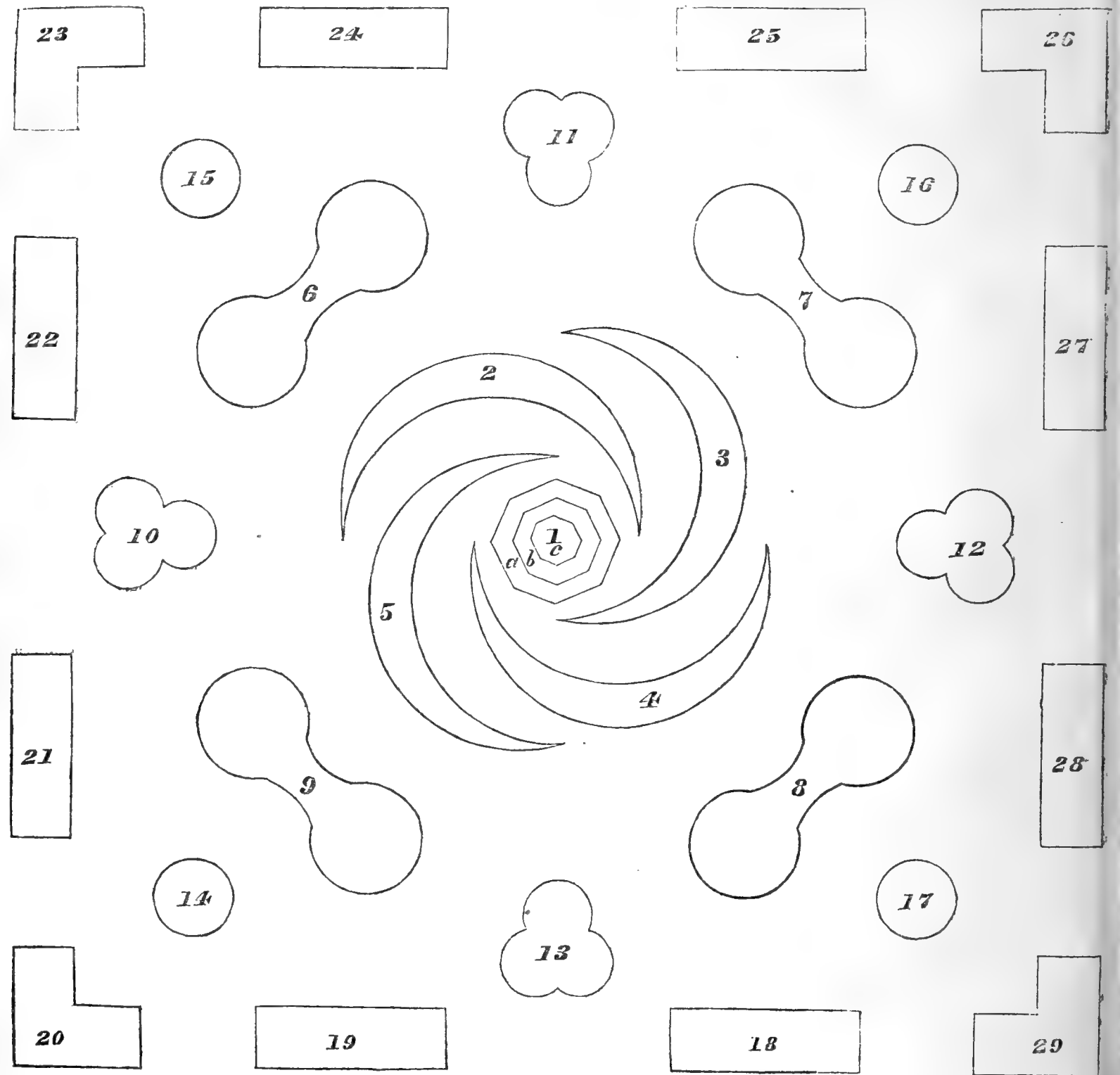
idea of privacy. It is high time, however, it should be candidly stated, that when living in a house constitutes part of the remuneration of a servant, that house for the time he remains in it is as much his *castle* and home, as the mansion is the *castle* of the employer; and that the employer before he enters the *castle* of his servant ought to exhibit the same rules of courtesy and politeness as he would expect from a visitor before entering his mansion. The reasons for such courtesy lie upon the surface. Inattention to such little matters has deprived many an employer of a good servant. Some of the best gardeners have left otherwise-desirable places because their employers, no doubt without thinking of giving offence—quite the reverse, would come themselves and bring their friends with them, and, without knocking or ring, open the latch and walk in, whoever might be there and whatever might be doing. There is hardly any mistress of a house possessed of a desirable delicacy and sensibility, that will not under such circumstances feel annoyed, though she may not show it. However untimely the visit, the mere knock and waiting until the door was opened would enable her to appear as she deems with more propriety. Having mentioned the word *untimely*, I will go a step further, and say that in general cases, and especially when the gardener's wife does all or nearly all the household work herself, that untimeliness will extend until the clearing away after the mid-day meal. So much for the idea of privacy.

There is no necessity, however, for concealing the gardener's house, unless the employer has reason to be ashamed of it from its miserable rickety condition, or its position like a shed facing the north, so as to keep the sun from the windows. No one can pass through the grounds without seeing Mr. Gardener's house; and one of the best signs of gardening times is, the very handsome and commodious houses that many gentlemen have lately built for their gardeners—thus showing alike their interest in gardening, and the determination that their gardeners should have comfortable and healthy residences to live in.

On the east end of the mansion, but chiefly along its southern front, along the south front of the stables, having here a fine arched entrance, the south front of the bank of Laurels, and the south side of the kitchen garden, a long strip is devoted to pleasure-grounds and flower gardens, a pleasant winding walk leading from the west end through the woodland to the church referred to above. About the middle of this boundary kitchen-garden wall is placed a good-sized lean-to greenhouse communicating easily with sheds behind. The rest of that wall, not screened with shrubs and fine massive groups of Hollyhocks and Dahlias, is covered with Roses and other trailers, and fronted with a fine show of mixed-border and bedding plants; so that the mere idea of utility as to eatables never breaks in upon the contemplating of what is only pleasing to the eye. This is often so much lost sight of in small places, that vegetables, fruit, and flowers, are presented to view at once; thus lessening the gratification of contemplating each separately, as most of us are so constituted as to be best able to fix our attention thoroughly and pleasantly on one series of objects at one and the same time. Much might also easily be done, as at Courteen Hall, to make a small pleasure-ground look large, by the disposition of the walks, and the blocking out by evergreens, so that only a comparatively small space can be seen at once. This, of course, would not suit those who would prefer the whole floral display being brought under the eye simultaneously, and we would wish every one to gratify his individual taste. Looking at beautiful objects in succession seems, however, more agreeable to the generality of minds, and that is the idea carried out here.

Thus, for instance, in front of the greenhouse we have a small flower garden bounded by a circular bed, as far as I recollect, some six or eight feet in width. This was planted with rows of colour not across, but transversely or diagonally across, so that the lines were about double the length of the width, and had a very good effect; though, no doubt, another plan will be adopted next season. Then, out of sight of this we have regular striped-lined ribbon-borders, in front of masses of Laurels. Then, again, we have small groups, and single clumps of a good size. These separate clumps not planted of one colour, nor of a colour with a broad or narrow edging, nor of bands of colour throughout, but planted in good-sized patches of colour, with contrasting colour between them; the Perilla coming in nicely between yellow and scarlet. Often have we admired the taste displayed in straight-lined borders laid out as parterres in Box and gravel, the Box looking nice in winter especially; but

once bring the above idea into full play, and the Box and the gravel might be alike in the way. Without them the whole pattern could be changed every year, one colour serving as the dividing line from other colours. Even the chain-pattern border I lately described and praised at Kimpton Hoo will have its chief attractions in winter in this respect. Without the Box and paths the pattern could be changed every year. I have done something in this way, and mean to do more. To Mr. Robson we are indebted for showing what could be done on a large scale with fine effect on this system.



The chief flower garden right in front of the mansion, a plan of which is given, is planted as a whole more in the general style. The plan is simple and uniform, showing in the effect produced that the skill of the planter and culturist is far more important than the artistic lines of the beds. All is on grass, and it will be noted that there is plenty of room between the beds. The seeming crowding of the chasing-each-other centre beds is relieved by the centre No. 1 being an octagon of some fourteen feet in diameter formed into three rings; that next the outside being some two feet above the ground, and the highest ring some three or more feet. I am not quite sure of the heights. Wooden pegs keep the rings separate, and the outside one is covered with Ivy. This central bed is opposite the flower-garden entrance to the mansion; and as that is elevated above the ground level by a short flight of steps, the height of the pyramid in the middle does not prevent the whole of the garden being seen. When I saw it early on the morning after the Towcester Show all the beds were full to overflowing with much more bloom than has generally been the case this season. Granting the central figure to be

fifteen feet in diameter, the size of the other figures will be guessed at near enough. If far out, our friend will kindly correct us. The planting was as follows:—
1. Geranium Rubens, mixed with about half the quantity of Cineraria maritima, and the outer ring wreathed over the Ivy with yellow Tropæolum pelegrium.
2. Purple King Verbena.
3, 5. Brilliant Geranium.
4. Ageratum, pegged down to the same height as the other three.
6, 8. Shrubland Rose Petunia.
7. Lord Raglan Verbena.
9. Géant des Batailles do.
10. Purple King Verbena, edged with Golden Chain Geranium.
11. Fine rose Verbena, edged with Flower of the Day.
12. Mrs. Mildmay Verbena, edged with Golden Chain.
13. King of Scarlets ditto, edged with Flower of the Day.
14, 15, 16, 17, are beds raised about two feet to the centre. The stakes are outside, being covered with Ivy, and all planted

with *Lobelia speciosa* and Mangles' Variegated Geranium. These were very fine, the variegated leaves and the rich blue being so nicely mingled.

18, 19, 24, 25. Flower of the Day Geranium.

21, 27. Aurea floribunda Calceolaria.

22, 28. Prince of Orange Calceolaria.

20, 23, 26, 29. Scarlet Geranium, edged with variegated Alyssum.

The effect of the whole was very good, though different planters might have arranged it very differently. But for the *pearling* with the Frosted Silver Plant (*Cineraria maritima*) in the centre, the centre group as a whole would have looked dull; as, owing to the season, the *Tropæolum* had more leaves than flowers, and the leaves of Brilliant were not so white as usual. A broad band of a lively colour, white or yellow, round the outside of the raised bed, would have brightened up the whole; but I learned that Lady Wake dislikes yellow as much as I like it, for my friends tell me sometimes I have a mania for yellow in everything but a bridal nosegay. A broad band of the *Cineraria*, that always looks best on the round, would have had a similar effect.

A prominent and distinctive feature of this garden cannot be shown on any ground plan—namely, having tall standards with fine massive heads of flowers placed in all the large beds except those near the centre. These standards consisting of Scarlet Geraniums, Heliotropes, Fuchsias, Brugmansias of different colours, &c., and very fine specimens of *Cassia corymbosa*, which out of doors in summer flourishes as it never did in a tropical stove. These standards range from four to ten feet in height, and are nicely regulated and balanced as to size. The result is not to prevent you seeing all the garden at once if you wish to do so, but to lift up the garden, as it were, from a monotonous level of colour, and to furnish so many stand points for separate observation.

The square outline of the two ends of the group is, I presume, in deference to the straight line of the mansion; and the similar outline on the two sides is in deference to the two ends of the mansion, with which ends these clumps are in line—the flower garden thus being of the width of the mansion. Beyond the garden and close to the park are several bowers covered with Roses and Ivy, and several series of ornamental arches, generally in threes—the centre one being wider and loftier than the side ones. These arches are being covered with Roses and other creepers; and from their centres baskets of various sizes filled with flowering plants are suspended, and looking very nice to the admirers of this suspending system. These are only a little of what is done in this way; for, from the branches of large trees near the principal walk scores of such baskets are suspended, and which, by means of stout cords and pulleys, are lowered to be watered and regulated. A great deal of pleasure may be derived from this style of gardening by those whose tastes lead in such a direction.

I found many large seven and eight-inch pots were filled with Geranium cuttings as thick as they could stand, and were placed behind Fuchsias, &c., in the greenhouse; and there in some suitable place they would remain until turned out separately in earth and turf-pits in spring, to be covered with calico and straw mats.

To keep such a supply for the pleasure-ground, to maintain the greenhouse in a presentable condition, to decorate the mansion with an extra abundance of plants and cut flowers, and have early vegetables, Cucumbers, Melons, &c., not to speak of taking vanloads of plants, and very successfully, to the horticultural shows, most readers would imagine that Mr. Gardener had a fine lot of glass, with hot-water pits, and all the rest of it. They would be rather surprised to enter a small enclosure in the kitchen garden that might be called a Melon-ground, and find abutting against the boundary wall two small deep pits, of six or seven lights each, with room for fermenting matter, and helped by a very old flue. A lean-to vinery at the end of the pits, some thirty feet in length, heated also by a flue, with a pit for tan, &c., in the centre, and that, besides these, from a dozen to a score of frame-lights, constituted all the great glass preparatory and even ripening workshops. I may have recollected wrong as to a light or two, but I do not think I am much out of the way. If neither the grandeur nor the extent of a place are such good tests of professional ability as the achieving great and desirable results with little and inconvenient means, then there will be no discussion among those who have the privilege of knowing him as to the position the manager of these gardens occupies among his blue-aproned brethren. Few better instances could be afforded

of the truth of the old adage, "A good workman never stands still for want of a tool." All honour to whom that honour is due.

R. FISH.

NEW BOOKS.

TREATISE ON THE VINE.*—The chief objection to this pamphlet is its price—half-a-crown is eighteenpence too much in these days for thirty pages of thickly-loaded large type.

To the contents of the treatise, which, by-the-by, is not on the Vine but on its culture, we can give this praise—its directions are correct, though not new, and, to use the author's own words, "those who follow them cannot fail of success."

Mr. Caulfield commences with directions for making the border. He states that the fibrous surface of an upland pasture and cow manure (he should have stated the proportions) are "sufficient for all the Vine's wants;" but then, *more hibernicé*, he adds, four pages after, that crushed bones, charcoal, and lime rubbish are to be mixed with the compost. Still we have no definite proportions, which are always desirable in directions intended for the use of amateurs.

The directions for training the first, second, and third years are good. Mr. Caulfield preferring the short-rod to the spurring system.

Among the miscellaneous directions is the following:—"In February let the Vine be thickly coated over with the following wash:—To half a gallon of tobacco water made to boil, put three and a half pounds of soft soap, stir over the fire until it is dissolved, then add three pounds and a half of flowers of sulphur; let all be well blended, and laid on with a small paint-brush. I have found this wash effectual against even the appearance of mildew; and I have no hesitation in stating, that if proper attention be paid to ventilating, &c., no Vine disease can have existence."

This is very satisfactory testimony from a practical gardener "grown grey in the service of horticulture and arboriculture," and we coincide to a considerable extent in the cheering assertion, although we differ from him in his opinion as to the cause of at least one of the Vines' diseases. Mr. Caulfield states—"Previous to colouring, the skin of the berries becomes thin and transparent. More watchfulness must now be exercised in giving air early in the mornings, and not allow the heat to get excessive before ventilating. If this be neglected, the vapour of the house will condense on the glass, and fall on fruit and leaves, comparatively speaking, like scalding water. To this and sudden draughts can shanking alone be attributed. Many are of opinion that this proceeds from the border, but when the border makes wood that produces a good crop it has done its part: therefore, to find fault with it or the soil is out of the question—the interior management is alone blameable.

"When speaking on this perplexing subject, I wish to state that I had an illustration not long since, and which I consider sustains me in my opinion. Visiting an extensive garden—the gardener (a first-class man), conducted me through the houses, —the crop in one of which, he told me, was nearly all destroyed by shanking, owing, as he said, to the excessive wet of this summer, and that he was obliged to cover the border with boards to prevent the entire loss. But in this very house, the best White Syrian Grapes I ever saw, notwithstanding, were hanging. Now, if wet had been the cause, why not the White Syrian as well as the other varieties? Simply this, they were stronger in the neck of the berry, and better able to resist the condensed vapour and sudden draughts.

"As another proof that wet cannot be the immediate cause of shanking—throughout England, even in London, where Vines are planted outside dwelling-houses, and some in areas, I never saw shanked Grapes."

Now, so far from shanking being caused by condensed vapour falling upon the fruit, and its being exposed to sudden draughts, Mr. Caulfield will find that a bunch of Grapes inserted in a glass globe luted round its stalk will be just as much affected by shanking as a bunch left exposed to the vapour and draughts. If the roots of a Vine are kept withinside the house, in a compost such as Mr. Caulfield directs, and duly supplied with moisture, and if the stem and branches are duly aired and kept from being in a temperature too high in proportion to that in which the roots are performing their functions, there will be no shanking. The very fact of out-door Grapes in England rarely

* *A Treatise on the Vine.* By S. Caulfield, Superintendent, Richmond Nurseries, Dublin. John M. O'Toole, Dublin.

shanking is confirmatory of our experience, for the branches and roots of the Vines which bear them are exposed to temperatures balanced and regulated by Nature.

Mr. Caulfield's treatise won the prize, defeating fifteen competitors, offered by our spirited and ably-conducted contemporary, the *Dublin Agricultural Review*. The author was formerly gardener to Lord Plunket, Bishop of Tuam, and is now Superintendent of the Nurseries of Messrs. Farrell & Son, Richmond, near Dublin. Mr. Caulfield is a very successful Grape-grower.

TRADE LISTS RECEIVED.

A Descriptive Catalogue of Fruits cultivated and sold by T. Rivers, Nurseries, Sawbridgeworth, Herts.—This is much more than a mere enumeration of varieties alphabetically arranged. It gives a description of each, its quality, the soil and stock on which it thrives best, and its season of ripeness. Nor is this all, for there are drawings and descriptions of each form of training, besides much miscellaneous useful information interspersed. For example:—"There are soils in which some kinds of Pears, in spite of good cultivation, do not succeed on the Quince stock. In such soils trees of some such free-growing sort as Prince Albert should be planted and the recusant sorts grafted on them; they will then to a certainty succeed, and bear quickly and well. The following method may be followed: young and healthy trees budded on the Quince stock of Prince Albert or Bezi Goubault should be planted and suffered to grow one season, and then early in spring be cut down and grafted with delicate-growing kinds. Pear culture is yet but in its infancy." "The American varieties of Apples named in the above list deserve a few words of commendation, and more attention in their culture than they have hitherto received. Their flesh is delicate, juicy, and easy of digestion, more so than that of our European sorts, the best of which—such as the Ribston Pippin, the Cornish Gilliflower, and the Brandy Apple—require masticating and digestive powers of the first order. The Melon, the Mother Apple, and the Early Harvest seem to be very hardy, and bear well in our gardens in the south as bushes or pyramids on the paradise stock, but are quite worthy of a wall in cold climates. The Northern Spy is a magnificent Apple, but it should be grafted on the paradise stock, and be planted against a wall with a warm aspect, and the trees removed biennially; it is backward in coming into bearing. The Newtown Pippin requires the same treatment, and when properly cultivated is quite equal in size and superior in flavour to those imported. We have hitherto thought Apples unworthy of high culture; the above kinds, with the Mela Carla and Calville Blanche, should be cultivated in the orchard-house or trained against walls. The latter is most remarkable for its delicious flavour when grown in the warmer parts of France, whence it is brought to Paris in large quantities in winter. It is also most excellent when cooked. Many of our old garden walls, which are now partly covered with diseased Peach and Nectarine trees, should be appropriated to the culture of fine Apples and Pears, and Peaches and Nectarines grown under glass." "There is no species of fruit which has advanced so rapidly in favour as the Plum, and its culture and estimation will continue to increase when it is found that as bushes and pyramids it may be cultivated with success under tiffany-houses to shelter the trees from the effects of spring frosts. A few years since only the Green Gage, Coe's Golden Drop, and a few other kinds requiring wall culture were known in our gardens; but now we have late and early hardy varieties of great excellence, keeping our desserts and kitchens supplied from the end of July to the end of October. Their culture in orchard-houses is a great triumph. The Green Gage tribe has lately received some most valuable acquisitions. The July Green Gage is, perhaps, the most valuable Plum that has been introduced since the advent of the old Green Gage. It is larger than its type, and has all its fine aroma; it ripens in orchard-houses about the middle of July, and in the open air, in the southern counties, towards the end. Oulins' Golden Gage, Lawrence's Gage, M'Laughlin's Gage, Transparent Gage, Brahy's Green Gage, the Jodoigne Green Gage, Guthrie's late Green Gage, and the Reine Claude de Bavay succeed it and carry us through September till late in October, so that we can have these delicious Plums on our tables for nearly three months. Late Plums should be gathered just as they commence to ripen, and be laid in a greenhouse fully exposed to the sun, they then shrivel slightly, and become very rich and good."

Catalogue of Plants cultivated and sold by G. Jackman & Son, Woking Nursery, Surrey.—This is a good enumeration not only of fruit trees, but of Roses, Coniferae, and other plants, with prices attached to each.

List of Superb Double Hollyhocks and Pansies: W. Chater, Saffron Walden Nursery.—The silver cups won by Mr. Chater's Hollyhocks at Bishop's Auckland, Brighton, and the Crystal Palace are sufficient evidence of his superior excellence in the selection and cultivation of those flowers. A very full descriptive list is given, and the following hints as to their culture:—"They require good old garden soil, well trenched over to the depth of two feet, with plenty of thoroughly decomposed manure, such as old Cucumber-beds, or night soil mixed with the earth. If the subsoil is wet they will thrive remarkably well in the summer, but in the winter wet is very injurious to them, when old plants are allowed to remain; to prevent which I remove the mould round the neck of the plant, and fill up with white sand, about six inches round the stem, level with the surface; it is simply to preserve them from wet and insects, from which, in the winter, they are apt to suffer very much if not killed. I strongly advise young plants being planted every year, as you would Dahlias, to secure fine flowers. They may be propagated by single eyes in July and August, also by cuttings in the spring, placed on a slight bottom heat. Plants raised in the summer are best preserved by repotting them in October into large pots—the larger the better—in light, rich, sandy earth, and placed in a cold frame or greenhouse, giving plenty of air on all favourable occasions; they will then grow during the winter. In March or April turn them out into the open ground, and they will bloom as fine and as early as if planted in the autumn. Plants even put out in May will flower the same year. Plant them not less than four feet from row to row, and three feet apart in the row. If grouped in beds, not nearer than three feet each way. They will grow well in the shade of distant trees, but by no means must the roots interfere. In May or June, when the spikes have grown a foot high, thin them out according to the strength of the plant; if well established, and very strong, leave four spikes; if weak, two or three; when they are required for exhibition only one must be left."

William Paul's Rose Catalogue, Cheshunt Nursery and Seed Warehouse, Waltham Cross, N.—This is divided into two parts. 1, Summer Roses, flowering from May to July; and 2, Autumnal Roses, flowering from May to November. In addition to this, they are arranged in the usual classes, with good descriptions. We need only add that Mr. W. Paul is also author of the following excellent works on this flower:—"The Rose Annual," "The Rose Garden," and "Morning Rambles in the Rose Gardens of Hertfordshire."

Descriptive Catalogue of Selected Roses cultivated for Sale by J. Cranston, Nurseryman, &c., King's Acre, near Hereford.—This begins with a descriptive list of the "New Roses of 1860;" and then gives a list of older varieties classified and arranged like that just noticed. It is a very full and excellent catalogue.

TO CORRESPONDENTS.

INSECT ON FUCHSIAS (*A. Paine*).—All the insects had departed, but judging from the state of the leaf we are pretty certain that the plants are overwhelmed with the thrips. Dust them thoroughly and repeatedly with Scotch snuff: and when once you have subdued your enemies keep them from returning, by having the house better ventilated and the air constantly more moist.

MUSHROOM-BEDS (*A Subscriber*).—In previous volumes Mr. Fish, Mr. Errington, and others have given the most minute particulars as to Mushroom-beds in various circumstances. In your house, we presume, you have no means of heating. You must have decaying organic material in which to plant your spawn: Horse-droppings, sheep and deer-droppings, are the best for this purpose—sufficiently dried before using, so as not to waste too fast or heat too violently. In want of these, well worked dung from the stables, such as would be fit for a Cucumber-bed, will do well if firmly packed together. In such a case as yours you might have a bottom made of such material a foot thick, and horse-droppings mixed with a portion of litter nine or twelve inches more. If this is dried a little beforehand, a few inches may be put on at a time firmly beaten, and a few inches more when it does not heat much. A little dry earth will be useful at this time for moderating the heat. When the bed is about 80°—like new milk in warmth—it may be spawned, placing pieces like Walnuts eight inches apart all over the bed, merely covering them; beat firm when done, and watch as to heat. If it does not rise higher in a few days, then cover with two inches of soil, beat firm, moisten the surface, and make smooth, and, when dryish, cover with litter to keep up a heat of from 50° to 60° on the surface of the bed. Take care the bed does not get too hot. Provided the bed is made at the end of this month, it may require to stand a week or more before it is safe to spawn it; then it may be another week or more before you can earth it; and after that you must calculate on six to eight weeks before you get Mushrooms. There will be more on this subject shortly.

VARIOUS (D. West).—Any one asking *eleven* questions at once must be answered very briefly. *Dessert Apples* in order of ripening:—Early Harvest, Joanneting, Devonshire Quarrenden, Blenheim Pippin, Cox's Orange Pippin, Downton Pippin, Margil, Ashmead's Kernel, Lamb Alley Pearmain, Nonpareil, Sturmer Pippin. *Kitchen Apples*:—Carlisle Codlin, Springrove Codlin, Flower of Kent, Gloria Mundi, Hawthornden, Alfriston, Dumelow's Seedling, Royal Russet, Winter Pearmain, Hambledon Deux Ans. *Dessert Pears*:—Autumn Bergamot, Beurré Capiaumont, Bishop's Thumb, Eye-wood, Hessele, Jargonelle, Jersey Gratioli, Louise Bonne of Jersey, Williams' Bon Chrétien, Winter Nelis, Swan's Egg. *Baking Pears*:—Bezi d'Heri, Catillac, Gliogil. You may remove a spit depth of soil if eighteen inches remain afterwards; manure and fork, not trench the soil. Grafting is a slower mode of obtaining fruit than planting well-advanced trees. Lime-wash in early spring. All the trees are desirable we have named, select according to your need. Of *Cherries*, Black Eagle is early, and Coe's Late Carnation a September fruit. The Kentish is the best cooking Cherry.

WINTERING BEDDING GERANIUMS (J. C. H.).—If you can keep the frost and damp from the Tom Thumbs, your plan will do *capitally*. We would take off every morsel of a leaf under the circumstances.

WINTERING DIANTHUS HEDDERWIGII (G. J. C.).—These new Indian Pinks are somewhat more hardy than the old race, but a long winter shatters them much on strong land. In sandy soil they seem to take little hurt. Our own stock of them are to be wintered thus:—All the old plants will be left as they are on light sandy soil; but the young stock from cuttings we shall put into cold frames till the spring. The best way to do them in future is to raise some seedlings every spring, and when these are in flower to choose the best and propagate from them, and the young stock to be under some shelter if only for fear of slugs or accidents through the winter. That will prolong the season of bloom.

CUTTING BACK HYDRANGEAS AND FUCHSIAS (Idem).—This is the last best time to cut back the shoots of Hydrangeas; but early in September is the most proper time, as then their absence will give more light and air to ripen the wood for next bloom, and also to throw the force of the roots in the same direction. Most people prefer to cut back their Fuchsias in the spring. We depend more on how they are to be kept over the winter. If they have the least warmth we do not prune till spring; if the frost is merely kept from them we cut in November.

CLEMATISES—SPIRÆA CALLOSA (A Subscriber).—We never heard of such names of Clematis as appendiculata, microphylla, and leptophylla. There is some mistake in your lists; send to the Society that sent you these names and ask them to explain them. None of your names, and probably none of the plants are stove plants in any part of Europe, and most of them are hardy in all the countries of Europe with which we are in correspondence; but the subject of hardy or half-hardy plants is too grave to be given at random to people who do not mention from where they write to us. The *Spiræa callosa* and all the *Spiræas* require exactly the same soil and treatment as the common Lilac; and at Kew there are beds of all the best kinds of them, and of others which do as Lilacs with the same care and treatment.

CROCUSES IN A CLAYEY SOIL (Idem).—Crocuses will do on any soil which is not too much clayey for Beans; but strong clay soil is not at all fit for most bulbous roots, but by reducing it so as to grow Carrots it would answer for most of the strong border bulbs. The "Pigeon Book for the Many" contains general directions for the arrangement and fitting up of the cote.

ROSES FOR STANDARDS ON A WALK'S SIDES (J. C. H.).—You propose 1. William Griffiths. 2. Madam Rivers. 3. Léon des Combats. 4. Lord Raglan. 5. Queen Victoria. 6. Madame Schmidt. 7. Louise Odier. 8. Apolline. 9. Gloire de Dijon. 10. Paul Ricaut. 11. Charles Desprez. 12. Cardinal Patrizzi. Nos. 6 and 12 are too dwarf for avenue standards, and Paul Ricaut is only a summer bloomer. Therefore, notwithstanding their rich colours, we would not plant these three as you propose. For 6 we would plant Madame Masson; for 10, Duke of Cambridge; and for 12, Evêque de Nîmes, or a Bishop instead of a Cardinal.

RHODODENDRON PLANTING (W. H. B.).—The best place to go to for Rhododendrons is a respectable nursery; but journalists must not prefer one before another. The next six or seven weeks is the best time to plant them in British gardens; but Rhododendrons can be planted any week in the year, except just while making their annual growth, and when the ground is frosted. The best selections we know of are in Mr. Appleby's papers on that family. See our No. 602. The best of each colour are there named.

FUCHSIA PRIZE (A Lover of Fuchsias).—We have no notes about the Royal Botanic Garden Show.

USES OF A GREENHOUSE (D. B. B.).—All that was said at page 18 is thoroughly applicable. Strawberries may be commenced with at new year or at Christmas-day, or earlier or later; but later, other things being equal, the more fruit will you be likely to get—but they will not be so valuable as when had early. Cucumbers may also be commenced with as soon as you like, but the same rule will hold true. To bear in winter the plants should be raised at the end of August. But with all this we must give you a caution. Vines in pots may also be started along with the Strawberries, either being placed on the floor of the house or on a bed there, or even in the cucumber-bed before the Cucumbers are planted. See an article on Vines in pots lately. It matters not when these Strawberries or Vines are commenced with, provided there is a division along the front to keep the heat chiefly at first about the Cucumbers. If Vines, Strawberries, and Cucumbers are to be respectively started and grown in the same house, heated by one flue, and without any division, then the Strawberries and Vines must be in the house fully six weeks before the Cucumbers are commenced with. You can thus give Strawberries and Vines a temperature at first of 45° to 50°, and rise gradually in that time to 60° and 63°, and so forth. If the Vines and Strawberries are to be brought into a house suitable for Cucumbers, they must be brought forward in another place until the Vines are well broken and the Strawberries are in bloom and setting. Then they would do well—the first on the floor, and the second on the first and second shelf at the top of the back wall, and would continue to do so until the roof was too much covered with foliage. The top shelf when air is not given will be the warmest part of the house; and provided that, in a heat suitable for Cucumbers, you at once placed Strawberries there from the open air or a cold pit. We should only deceive you if we held out hopes of a success worthy of the name.

RUSTIC WORK (G. R.).—We do not know the price of Ricauti's volume. If you write to the publisher, enclosing a stamped envelope, he will probably inform you. He is Mr. J. Carpenter, Bookseller, Old Bond Street.

WINTERING GERANIUMS (W. H. G.).—Your light attic will do. You must exclude frost. Any stove with a pipe to carry off the smoke, and a flat top for a vessel full of water to stand on will do. You will find fuller instructions in "Window Gardening for the Many," and "Greenhouses for the Many," which you have just bought.

MANY QUESTIONS (A Constant Reader).—Buy our No. 527, for all about a Warden Case. Your plants are too large. Use sulphate of ammonia very sparingly for bulbs. Lime water is useless for the Violet leaves; dust them with Scotch snuff. You can have our last volume. If you had THE COTTAGE GARDENER direct from the office, you would have it on Wednesday morning. It is published by eleven every Tuesday morning. Dog biscuits horrible food for Dorkings or any fowls. Buy "Poultry Book for the Many." The room would do for some plants, but birds would dirty them. Buy our "Window Gardening for the Many."

LOAM (An Obligated Reader).—By "a good, strong, rich loam," is meant such a soil as forms the top six inches of a fertile upland pasture. It is a soil that can be worked with the spade at any time when not frozen. It is crumbly even in wet weather, and not dusty even in the driest season.

GERANIUMS, AUNT HARRIET'S AND HARRY MOORE'S MODE OF WINTERING (G. B. C.).—Aunt Harriet's mode is in our No. 14 (Vol. I., p. 150), and Harry Moore's in No. 53 (Vol. III., p. 5).

GYMNOGRAMMA WETENHALLIANA.—This beautiful Fern was raised by Mr. Kelly, gardener to Mrs. Ridgway, of Ridgmont, Bolton-le-Moors. The specific name was given by Mr. Kelly to commemorate a nephew of Mrs. Ridgway. We give these particulars, because Mr. Beaton made some slight errors in the names at page 3 of the present volume.

BROMBOROUGH POOL WORKS HORTICULTURAL SOCIETY.—Our Bromborough people will be greatly delighted in reading their statistics so nicely out in print. Beyond the use of the land, for which they pay fair rent, the use of a large room, and a small annual subscription in aid of the Show-expenses, our people in this matter owe nothing either to our Company or to me. Our Mr. Hatcher has taken the leading part of all our horticultural doings, and compiled the statistics. Through the allotment gardens being most popular, he has been most actively and ably helped by some of our best people who are on the gardens committee.—Geo. F. WILSON.

MIDLAND FLORIST (W. M. Wardrop).—We know nothing about this serial. If the Editor will not answer you we must not attack him for his silence.

NAMES OF FERNS (J. F. Armstrong).—1. *Adiantum pubescens*. 2. *Woodwardia (Doodia) media*. 3. *Cystopteris fragilis dentata*. 4. *Asplenium trichomanes*. 5. *Pteris tremula*. 6. *Hymenophyllum unilaterale (Wilsoni)*.

NAMES OF PLANTS (W. S.).—The plant in flower is *Hyoscyamus canariensis*. The other is not recognisable. (A. K.).—You plant is *Clethra alnifolia*.

POULTRY AND BEE-KEEPER'S CHRONICLE.

POULTRY SHOWS.

OCTOBER 24th. FROME AGRICULTURAL SOCIETY. *Hon. Sec.*, Mr. Charles Harding, jun., Grandon Farm, near Frome. Entries close October 23.
NOVEMBER 7th. DEVIZES AND NORTH WILTS. *Hon. Sec.*, Geo. Saunders Sainsbury, Rowde, Devizes. Entries close October 13th.
NOVEMBER 21st, 22nd, 23rd, and 24th. WEST OF SCOTLAND ORNITHOLOGICAL ASSOCIATION, GLASGOW. (Pigeons and Canary Birds.) *Sec.*, Thos. Buchanan, 74, Argyle Street, Glasgow.
DECEMBER 3rd, 4th, 5th, and 6th. BIRMINGHAM. *Sec.*, Mr. John B. Lythall, Offices, Unity Buildings, Temple Street, Birmingham. Entries close November 1.
DECEMBER 6th. HULL AND EAST RIDING. *Sec.*, G. Robson, 25, Waterwork Street. Entries close November 22nd.
DECEMBER 12th, 13th, and 14th. NORTHERN COUNTIES (DARLINGTON). *Sec.*, J. Hodgson, Darlington. Entries close Nov. 19th.
DECEMBER 12th, 13th, 14th, and 15th. CRYSTAL PALACE. (Poultry, Pigeons, Rabbits, Ornamental Water Fowl, and Pheasants). *Sec.*, Mr. W. Houghton. Entries close November 10.
DECEMBER 21st and 22nd. HALIFAX PIGEON SHOW. *Sec.*, D. R. Edgar. Entries close December 8th.
DECEMBER 28th and 29th. KENDAL. *Hon. Secs.*, G. C. Whitwell and T. Wilson.
JANUARY 30th and 31st, 1861. ULVERSTONE. *Hon. Sec.*, Mr. T. Robinson, The Gill, Ulverstone.
N.B.—Secretaries will oblige us by sending early copies of their lists.

PURITY OF RACES.

To revert to the subject we treated of some weeks since—viz., the purity or origin of races, we have to remark that observation seems to prove it is much easier to get size than colour. Also, that in breeds imported into this country which cannot be renewed or strengthened by the introduction of fresh blood, degeneracy is first shown in those of small breeds by an increase of size, while in the larger specimens the first indication of wearing out is that there is diminution of bulk and substance. We do not pretend to have seen the first of the black Ducks imported into this country, and known as East Indian, Labrador, Buenos Ayrean, &c. We saw some of the first, and they were very small, not larger than Widgeons. Now, spite of every care they increase in size.

This is only one out of many cases we might quote, but it

answers our purpose. To accomplish our wishes or desires to maintain any of these breeds in perfection, we "*faute de mieux*," are obliged to get that nearest to our requirements; and we thus form our judgment from an impure source, or we are obliged to draw on probabilities and contingencies in order to arrive at a conclusion. It is worthy of note, that hybrids are not met with in a state of nature. The difference between certain breeds is hardly perceptible, yet we always find it naturally marked as distinctly as if they differed in everything.

Another thing to note in a state of nature is, there is no degeneracy. Close observers will tell you, and records of weight will prove to you, the Wild Ducks, Widgeons, Swans, Hares, Rabbits, and Pheasants, are the same now as they were many years ago. They weigh the same, they are as prolific, and their plumage is as brilliant.

We know there are places where we may be told Hares and Pheasants have increased in weight. We readily admit it; but judicious management has only restored them to the size they should always have been, and to the properties they had lost by interbreeding. To prove more than this, Pheasants must be produced of an average weight of 5 lbs., and Hares of 12 lbs. We have no doubt of the purity and distinctness of every breed in nature; but even when at large, and living "*feræ naturæ*," there must be the introduction of new blood, but not a cross. This is an important phase of the question. As soon as the latter is adopted, we come either to the composite or hybrid. The first may be useful, as, for instance, in certain climates and on certain soils Dorkings may be made more profitable by a cross with Game or Brahma Pootra, or by *fresh blood* from a more trying or ungenial climate. The Dorking bred in the lower parts of Yorkshire, or in the damp parts of Lancashire, may be with equal purity a stronger and more robust bird than that reared in Sussex. Just in the same way that in some parts of Europe, Spain for instance, the inhabitants of the north are, although derived from the same stock, a hardier and more vigorous race than those of the south. The introduction of fresh blood should be from a stock quite distinct; but too much care cannot be taken to secure purity. The produce of the cross between the Dorking and the Brahma will breed many birds that, so far as appearances are concerned, leave nothing to desire in that respect. Yet their progeny will show the cross plainly.

Having stated the result that may be expected from a judicious, and, in some instances, a necessary cross, we may give an illustration of the effect of the introduction of fresh blood. We knew a covert in the north of England where the Pheasants had been allowed to breed from the same stock till, in familiar language, they did not breed a young bird for an old one. We were consulted on the subject, and advised that a number of cocks should be procured from the eastern counties and turned down. Three years afterwards there was the best breed ever known for numbers, and the pale-headed, dull-plumaged, sickly birds were exchanged for those that cannot be seen or eaten without being admired.

This was the result of the introduction of fresh blood, and the same may be carried out in any poultry-yard, illustrating the belief we entertain, but which is disputed by some, that *each race is distinct*.—B.

SOUTHSEA POULTRY SHOW.

WE have received some complaints from exhibitors of Pigeons at this Show, complaining that their birds were delayed on their return, and some were consequently dead in their baskets. The result of inquiries we have felt bound to make has been that all the birds were despatched from the Show on the Saturday. We see many objections to sending them off on this day. It involves, in many instances, a delay of twenty-four hours. Railways do not deliver as punctually on Sundays as on other days. Many do not undertake to book or carry parcels on Sunday, except by mail train. There is, also, always more or less delay in the transit of baskets from one railway to another in London. It follows, then, that the secretary of a show in the west or south-west of England may strictly do his duty, and by an 8 A.M. morning train he may despatch every basket to the station. Grant, which is not always the case, that the Master is able or willing to send them off at once, they reach London at 12, and if they have to continue their journey to the eastern counties, they will probably reach Shoreditch in the afternoon. Either they must be forwarded by the mail train which does not call at every station—and if it does, they will probably lie at it till

Monday brings a return of traffic and delivery—or they must remain at the London terminus till then. In either case there must be great loss of condition, if not death, and that without any fault on the part of the secretary.

We, therefore, think it will be for the interest of shows, exhibitors, and secretaries, if arrangements are made which will enable birds to be despatched at latest on Friday. We cannot help adding that railways can well afford to take a little trouble in these matters. Poultry Shows pay them more money than they imagine.

WORCESTER POULTRY EXHIBITION.

I HAVE read the report of this Meeting in THE COTTAGE GARDENER of the 16th inst., and it is certainly but an act of duty on my part as a visitor to add my personal acknowledgements of approval of the management throughout.

The courtesy, attention, and general care bestowed by the Honorary Secretary, Mr. Griffiths, were untiring; even although the pressure of correspondence during the period the Exhibition was open to the public view far surpassed that of the generality of local shows. It was evident that not a few poultry amateurs were most anxious to secure for themselves, at the Worcester Meeting, specimens to make complete their own respective pens intended for competition at the fast-approaching important trials of Birmingham and the Crystal Palace: hence, no doubt, the great increase of applicants at Worcester as claimants, both by letter and also personally. There will be numbers of even our most highly reputed breeders that will this season find it a matter of no little difficulty to select from their own stocks perfectly *well-matched* chickens that are the produce of early broods. The severity of March, April, and May told fearfully on the first hatches; and it is admitted that most clutches of even a dozen at the onset dwindled down, in spite of every care, to perhaps a fourth, or even a fifth, of that number during the only time that the attempt to raise chickens for competition was worth making. The demand on every side for "a first-rate cockerel," or a "pullet or two to match one already in possession," causes parties who happen to have been successful in rearing such isolated specimens the opportunity of realising amounts far beyond customary ones. The simple fact is, scarcely a single show now takes place in which numbers of pens are not claimed for the foregoing reasons.

But to return more particularly to the Worcester collection. With Turner's pens of Sheffield, and the advantages of a most commodious Music Hall in which to arrange them, a more satisfactory show has rarely been witnessed. Every one anticipated a hard race in the *Game* classes. None were disappointed. The Hon. W. W. Vernon may with truth be proud of as good a pen of Black-breasted Reds as could be desired. Mr. Archer's pen, a very close second, were manifestly less perfect in the pullets. Although the Brown Reds of the *Game* were very excellent, still they lacked much of the neatness that is always held to be most desirable in *Game* fowls.

Mr. Chune's Duckwing cockerel is without doubt the best and most forward chicken of the colour that has been shown this year. The Worcestershire Piles were capitally represented. It is high time, however, that they should be carefully "*dubbed*," as they are shown to great disadvantages until this necessary operation is performed. If the Grey *Dorkings* anticipated at Birmingham are to surpass the whole class (for all were capital) that were shown at Worcester, they must indeed far outstrip those of former years, although the "*Mother Show*" has always stood pre-eminent for these most useful birds; nor will the Rev. G. Hodson's White *Dorkings* be easily compelled to give up their laurels. The *Spanish* proved how intensely these beautiful birds feel severity of weather. Almost constant housing must be their lot if success is expected this season; they being one of the most difficult of all birds to restore to constitution if once by temporary neglect allowed to go ailing. Although the *Cochins* were so praiseworthy, report whispers they will be left far behind at Birmingham. The numbers of birds well known to be expressly reserved for this hard contest none would accredit from hearsay. The individual care and attention bestowed on them during the next six weeks by their respective owners will tend much to their ultimate position. All things considered, the *Hamburgs* and *Polands* deserved most avourable mention. It is now pretty common among poultry fanciers to identify Mr. Fowler and Mrs. Seamons, both of Aylesbury, beyond all others as breeders of *Ducks* and *Geese*. They both proved they not

only mean to continue a-head, but also actually outstrip their productions of former years.

The sweepstakes for Game Cocks was worth a long journey to inspect, yet there were doubtless many birds that by proper feeding and attention could have been marvellously improved. The Game *Bantams* year by year become more and more popular, which they richly deserve. Only three pens of Sebrights were entered, and those decidedly inferior to such as were shown only some three or four years back. I was much gratified to see the Show so well attended, and the very pleasing manner in which everything connected with it was transacted.—VIATOR.

HAMBURGHS AT WORCESTER.

I SEE by a report of the Worcester Show in *THE COTTAGE GARDENER*, in your notes respecting the Hamburgs two remarks that surprise me. You say Mrs. Pettat's pen of Silver-spangled Hamburgs realises one excellence which seems almost lost—that of a properly laced and barred wing. It has always been the opinion of Yorkshire breeders that the lacing is objectionable, amounting almost to a disqualification. There is no difficulty in producing the laced wing, but we always avoid breeding from any that have it: hence it has almost disappeared—and the name "Spangled Hamburg" seems to imply a spangled bird and not a laced one. I should be glad (and I am sure the breeders in this locality would also), if Mr. Hewitt, Mr. Baily, and Mr. Pulleine would give us their views on that point through *THE COTTAGE GARDENER*. I appeal to them, as they judged at Worcester and are our most popular Judges. It is a matter that ought to be set right.

The second statement that struck me was about the Silver-pencilled Hamburgs, that the Golden were going a-head of them. I cannot think that is correct. I sent a *faultless* pen to Worcester, which were not noticed; so that, if there were birds more perfect, there is not any falling off in the quality of that most beautiful and useful breed.—JAS. DIXON, *Bradford*.

THE BIRMINGHAM CATTLE AND POULTRY SHOW.

THE time for holding what are usually called the Christmas exhibitions is fast approaching; and we therefore remind those of our readers who are prepared to take part in the competition in Bingley Hall this year that *they should lose no time in applying for the requisite certificates*. The last day for making entries will be Thursday, the 1st of November, the Show this year being fixed for the 3rd, 4th, 5th, and 6th of December. As far as it is possible at present to form an opinion, the prospects for this year's meeting may be considered favourable, as we believe that a number of new exhibitors will enter the lists, while it is rarely that the old supporters of the Birmingham Show fail to make their appearance.

It is satisfactory to be enabled to add that the Council have not overlooked some changes which were required in their poultry prize lists, and which had been pressed on their attention by several of the leading exhibitors. The most important of these changes is the addition of separate classes for Silver Grey Dorkings—a concession which was certainly well deserved, and could not with propriety have been longer delayed. The Dorking classes are the most extraordinary in the whole Exhibition, and the marvellous improvement which has been made in this variety since the establishment of the Birmingham Meeting is universally acknowledged. Weight will always, of course, be of great importance in estimating the value of this our finest table fowl; but at the same time quality and beauty of plumage need not be overlooked—for many of the Dorkings are unquestionably very handsome birds—and the division of the coloured varieties which has now been made will, we are sure, be most satisfactory to the exhibitors, and greatly facilitate the labours of the Judges. Another change is the opening of classes for Brown and other Red Game fowl, retaining, of course, separate classes for the Black-breasted Reds, still further carrying out the same principle by which the Council have been guided, not to permit two varieties for one or the other of which a preference may be supposed to exist to compete together. The Game Bantams mustered so strongly last year, and formed so attractive a feature of the Exhibition, as to lead to a further recognition of their claims, and there is now a class exclusively for Black-

breasted Reds, another for Duckwings, and a third for Single Cocks.

We would again urge upon intending exhibitors that an early application for certificates is most desirable.

THE FIFTEENTH RULE OF THE BIRMINGHAM POULTRY SHOW.

PERMIT me through your columns respectfully to suggest to the Council of the Birmingham Poultry Society the propriety of revising their fifteenth regulation.

This regulation says that none but donors or subscribers of not less than £1 per annum will be entitled to compete for prizes. Exhibitors in addition to their subscription will be charged 2s. 6d. each pen. A subscriber may enter four pens of poultry, or six pens of Pigeons. Another regulation gives subscribers of £1 six admission tickets.

Now, many small poultry fanciers only keep one kind or class of birds, and, according to this regulation, to enter their single pen they must pay £1 2s. 6d., while their extensive and more wealthy competitors, who keep many varieties, can show four pens for 30s. This is unjust, and I have often heard it commented upon severely. I know, too, that it has kept many first-class pens from the Exhibition. It also leads to dishonest showing, small fanciers clubbing together and entering their pens in one name. If the Society would try the experiment of charging a uniform rate for each pen entered, or keeping up the privilege of four pens for 30s. to subscribers, admit exhibitors of one or two pens at about the same rate, or a little higher—say 7s. 6d. to 10s., the amount not to exceed 10s. per pen, with an admission ticket for each entry, it would give great satisfaction to many, increase the attractions of the Show, and I feel sanguine that the funds of the Society would benefit by it; while the competition would no longer be a monopoly in the hands of the great fanciers, but the humble fancier with his single pen be induced to try his chance in the great race for that much-coveted prize—one of the great Birmingham blue ribbons.—S. BARLOW.

RED WORM IN PHEASANTS.

I SHALL send you to-morrow two or three dead Pheasants. I will label them each to distinguish their peculiarities. I have, since I saw you in town, extracted many worms from Pheasants' tracheæ, and compared them under the microscope with those taken from waterbutts, and I came to the conclusion they are the same. One entomologist alone inclining to a different opinion; but his reason is from the fact, that the same could not exist in two such different elements—a reason easily combated by reference to the bott in the horse's stomach. I have met with the disease in one lot under peculiar circumstances, which I think may be interesting to you.

Being thirty miles from home, and accidentally hearing of a man who had twenty-four birds, I found them in a dirty, miserable room with a boarded floor. They looked very well, and I thought them a good sample to experimentalise upon. I sent a man and cart for them, and placed them in a mew, where some old ones had been, with a south aspect. In this mew was some hard water that had been there three days. Of this water they partook two days, when it was taken out, and they had no more water for ten days, when they showed symptoms of the distoma. They had been fed as they had previously upon sifted barleymeal and four eggs daily, new wheat and barley, and occasionally a few worms and maggots. I turpentine them all, but the cough was greatly increased by this. They also had all the bread, with strong beer, they would eat; but no water of any kind, save that which was in the meal and egg, which was very little. They gradually improved, but in the course of ten days the cough returned, and I applied the feather again with spirit of wine, and I liked this better. It is equally fatal to the worm, and not so irritating to the bird. They had all the beer we could induce them to take, still they flagged, and some died. We found it necessary to apply the feather again; but the new agent operates in killing them by the operation. I this morning applied the feather dipped in muriated tincture of iron, which I have used with success before, when the patient in a minute after struggled and died. I have killed many this year in this way, and upon dissection fail to discover the cause. I shall send you the bird, and hope you will examine

the windpipe below its bifurcation. I will send you the feather also.

I also was shown by a keeper this morning an old hen bird with the distoma. He was anxious to see me use the feather, or I should have sent you this bird alive as a specimen. I used the feather, and as I happened to have some of the tincture in my gig, used that also, and brought up six. The man has since sent me the bird dead. I never killed any, unless far advanced, till this year, and they have died with turpentine, spirit of wine, and the tincture.

To return to my twenty-four. They have had twice a-week cold boiled water left with them half an hour. Out of the lot only eleven survived. Now, this result begins to shake my confidence in the theory I had adopted—that the worms being the same as in the water, the eggs were conveyed through that medium, and that they were the same insect; because in this example I am quite sure none but boiled water was given them after the first application of the feather. It is possible the egg from which this worm comes may be blown about in the air, hatched after accidentally getting in the waterbutts and the tracheæ. But this is not probable. I have never been able to detect these worms in a leaden cistern; which I have in a scullery, and find them in abundance in the butts in the stable-yard. Possibly the soot from the chimnies may kill them in the former.

I have been shown some correspondence in *THE COTTAGE GARDENER* where I find they attribute death to inflammation, which I feel confident is a mistake; I have opened hundreds, and never found it. They die of starvation—consumption; but I should like to reserve this point for another occasion.—*SUFFOLK.*

RABBITS WILL PAY FOR KEEPING.

It is an injustice to these very interesting animals to charge them with consuming any undue and enormous quantity of food; whereas, by proper management, a large stud can be kept at a trifling cost, and share with poultry and Pigs the merit of being save-alls. I have kept Rabbits these thirty years, and have always made it a profitable amusement.

To commence Rabbit-keeping, the first thing is to get a good strain; they consume no more food, and require no more time to attend upon them than the commonest kind, and the produce is always saleable.

The next question is, Which is the best kind? The long-eared varieties have been my favourites, although I have found the foreign varieties most profitable. The long-eared Rabbits are unjustly considered delicate, but it is not the case. To get the desired object, which is length of ear, is only to be done by increased warmth and high feeding. Many persons buy these Rabbits from a warm room or shed, and put them in a cold out-house, where, of course, they soon pine and die: hence they are considered delicate. Any person buying long-eared Rabbits should know something of the temperature and food they have been accustomed to. Many fanciers, or dealers I may term them, have some mode of physicking their Rabbits, which forces the growth of ear, and improves the appearance of the coat, which looks as sleek as a mole; but as soon as they are sold, and get no more medicine they waste away, their coats get rough, and they soon die. The young fancier then gives up with disappointment and disgust. Rabbit-dealers cannot see the injury they are doing themselves by this practice, or they would discontinue it. I know districts where this science of medicine is studied. They breed very long-eared Rabbits, but once out of their hands they are soon no more. I have known several gentlemen who would have gone into the fancy very largely, but for being victimised in the commencement by these unprincipled men, thereby the fancy has suffered very much; for those men who were in a position to assist the fancy have given it up. In my experience I have found it better to go to men whose position is above those paltry actions, and buy, even if you pay a trifle more.

With the foreign varieties there is not this fear, as they are very hardy, and the only thing required of them is purity of breed. There are more varieties than is generally supposed. I have had in my time ten distinct kinds: of these I have found the Chinchilla, Silver Greys, Himalayans, Patagonian, and Dutch, the most profitable in consequence of the demand for them. The three first kinds are much sought after for turning out, and there is good sale for the young ones. The Patagonians being

extremely large, have been turned out to enlarge the warren Rabbits, and with much success.

Six years ago I bred large quantities of Chinchillas and Himalayans. At that time I had in my possession a piece of waste ground, about two acres, walled in, part of which I fenced in, and cultivated green food for the support of my stock; and being surrounded with market-gardens, I had no lack of food for them, as I kept a boy and donkey-cart, which went to the packing-yards and collected all the waste trimmings three days a-week.

I turned out twenty Chinchilla does and twenty Himalayan; they were all in young at the time of turning out. Towards their time of kindling I had a few trusses of straw thrown into them, which was soon carried away for their nests. At the end of five weeks I had them all netted, which was not very difficult as I had accustomed them to feed at one place at the call of a bell, which I always had rung at the time of putting down their food. It was surprising to see them all come scampering from different parts of the ground at the sound of the bell.

In the first catch I had got thirty-two of the does, these I put to bucks, which I kept in hutches, and after one night's absence from the warren turned them loose. This was done several times; but I found it too troublesome, and I resolved only to keep one kind—the Silver Greys, which were more in demand at the time, as I could not keep both kinds without being crossed. I then took up all the Himalayans, and turned out two Chinchilla bucks into the warren.

The Himalayans I kept in a paved yard; but the number had increased considerably, so I disposed of all the young, and retained my former breeding stock—twenty does. In the course of two years I had bred over 2400 Rabbits, and my books showed a net profit of £600 upon the outlay of £50, which I paid for my stock. I must inform you I paid no rent for the ground, as it was in litigation; but I kept an account of all that was laid out, and all that was sold. The greater part of my stock I sent to Poland, Prussia, and Belgium. At the end of two years I had to give up the ground. When first I took it it would scarcely grow anything, being impoverished by growing trees, &c.; but when I gave up possession it was the best piece of ground in the neighbourhood. Several gentlemen took pattern of my miniature warren, and one of them makes a good income by the above; but it is on a large scale in Glamorganshire.

Since then I have kept a large breeding stock in hutches, and have generally received more orders for young ones than I could execute. In my next I will give you some account of my mode of feeding and management.—*R. S. S.*

OUR LETTER BOX.

WORCESTER POULTRY SHOW.—The Secretary informs us that he sent to the Rev. J. B. "a catalogue and prize list on the 10th inst. That being the first opportunity he (the Secretary), had of sending to any one. The prize list having to be printed after mid-day on Tuesday, and the Show being open at night, he was too much engaged to have a chance before."

BREAST OF GOLDEN-SPANGLED HAMBURGH COCK (T. M.).—There are differences of opinion, but our belief is, a black breast is a capital defect in a Golden-spangled Hamburg cock. Even at the cost of other properties, we should advise you to substitute one with a spangled, not laced breast. The white deaf ear must not, however, be one of the points you sacrifice.

FATTENING RABBITS (Jemima Wilhelmina).—If you sell your Rabbits at 6d. each, it must be when they are very young, if you want them to pay. Even then it is doubtful, if you have to purchase the food for them. If sent to market at about ten weeks old they would, in all probability, sell for about 1s. each. If fat and well conditioned, perhaps rather more, but 1s. each would be an average price. To fatten young Rabbits we would recommend oat or barleymeal, bran, carrots, parsley, sow thistles, dandelion, &c. We have not tried buckwheat, but should recommend it ground. We think you could be supplied with good Chinchillas by Mr. Baily, of Mount Street, who took the prize for them at Sydenham.

WORK ON RABBITS (F. H.).—We have made arrangements for its translation, and shall illustrate it copiously; adding notes from other authorities.

BES (B. B. B.).—We studiously avoid noticing the proceedings of Societies unworthy of confidence. We are not surprised that you received no answer.

LONDON MARKETS.—OCTOBER 22.

POULTRY.

We have still a small supply; the only changes worthy of note being a little improvement in trade, and some diminution in the prices of Partridges.

| | Each—s. d. | s. d. | | Each—s. d. | s. d. |
|--------------------|------------|--------|---|------------------|------------|
| Large Fowls..... | 3 | 6 to 4 | 0 | Pheasants | 4 0 to 4 3 |
| Smaller Fowls..... | 2 | 9 „ 3 | 0 | Pigeons | 0 6 „ 0 7 |
| Chickens | 2 | 3 „ 2 | 6 | Grouse | 3 0 „ 3 6 |
| Geese | 7 | 6 „ 8 | 0 | Partridges | 2 0 „ 2 6 |
| Goslings | 0 | 0 „ 0 | 0 | Hares | 3 0 „ 3 6 |
| Ducks | 2 | 6 „ 3 | 0 | Rabbits | 1 4 „ 1 5 |
| Ducklings..... | 0 | 0 „ 0 | 0 | Wild ditto..... | 0 8 „ 0 9 |

WEEKLY CALENDAR.

| Day of M'nth | Day of Week. | OCT. 30—NOV. 5, 1860. | WEATHER NEAR LONDON IN 1859. | | | | Sun Rises. | | Sun Sets. | | Moon Rises and Sets | | Moon's Age. | Clock afterSun | | Day of Year. |
|--------------|--------------|--------------------------|------------------------------|-----------|-------|-----------------|------------|------|-----------|------|---------------------|------|-------------|----------------|----|--------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | m. | h. | m. | h. | m. | h. | | m. | s. | |
| 30 | Tu | Rooks return to nests. | 29.520—29.006 | deg. deg. | S. | .24 | 53 | af 6 | 35 | af 4 | 22 | a. 4 | 16 | 16 | 14 | 304 |
| 31 | W | Elm leaves fall. | 29.306—28.800 | 57—43 | E. | — | 54 | 6 | 33 | 4 | 53 | 4 | 17 | 16 | 16 | 305 |
| 1 | Th | ALL SAINTS. | 29.204—28.714 | 58—43 | S.W. | .20 | 56 | 6 | 31 | 4 | 34 | 5 | 18 | 16 | 18 | 306 |
| 2 | F | Sycamore leafless. | 29.778—29.659 | 55—31 | S.W. | .05 | 58 | 6 | 30 | 4 | 27 | 6 | 19 | 16 | 18 | 307 |
| 3 | S | Plane leaves fall. | 29.714—29.572 | 55—33 | W. | .13 | VII. | | 28 | 4 | 33 | 7 | 20 | 16 | 18 | 308 |
| 4 | SUN | 22 SUNDAY AFTER TRINITY. | 29.227—29.000 | 56—38 | S. | .23 | 1 | 7 | 26 | 4 | 49 | 8 | 21 | 16 | 17 | 309 |
| 5 | M | Gunpowder Plot, 1605. | 29.406—29.262 | 58—49 | S.W. | .62 | 3 | 7 | 24 | 4 | 10 | 10 | 22 | 16 | 15 | 310 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 53.6° and 38° respectively. The greatest heat, 67°, occurred on the 30th, in 1854; and the lowest cold, 20°, on the 3rd, in 1845. During the period 117 days were fine, and on 114 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

PROCEED with such operations as draining where required, laying Box-edgings, gravelling walks, and the trenching of all spare ground. Beans (Broad), a few Mazagans may be planted in soils and situations favourable to vegetation in winter, either to remain where they are planted, or on a sheltered border for transplanting early in the spring. Cabbages, vacancies in the main plantations to be filled up immediately. Carrots, the whole of the principal crop to be taken up, and allowed to dry before they are stored away in sand. Cauliflowers, remove the dead leaves from the plants in frames or under hand-lights; stir and sprinkle the surface of the soil with quick lime, all vacancies to be filled up, air to be given freely every fine day. Celery, continue to earth up while the weather is favourable. If severe frost should set in some long litter to be laid over the most forward crops. Endive, when quite dry tie up a quantity for blanching, it could then be more easily removed to a pit, or frame, when a severe frost sets in. Onions, handweed the autumn sowing, and slightly hoe the ground about them. Peas, a sowing of some early sort may be made, as advised for Broad Beans. Shallots and Garlic, plant in light and dry soils. If heavy and damp defer the operation to February.

FLOWER GARDEN.

If a gay spring garden is required, no time should be lost in planting a good stock of bulbs and the other plants as lately recommended, to give a variety and a pleasing effect. Chrysanthemums against walls to have their shoots closely tacked to, and some slight protection to be in readiness to save them from frost. Pansies may still be planted out while the weather is favourable. Standard Roses to be looked over, and all long shoots to be shortened merely for the purpose of abating the power of boisterous winds upon their rampant overgrown heads. Collect Fern or any other such material, for covering all sorts of half-hardy trees and shrubs against severe weather; but the operation of covering to be postponed as long as it is consistent with the safety of the plants. Clip and weed Box-edgings, and sweep gravel walks frequently to prevent leaves from staining the gravel. Proceed with planting ornamental trees and shrubs, and with new ground work.

FRUIT GARDEN.

When Peach and Nectarine trees begin to drop their leaves, it is advisable to touch them over lightly with a fine-twigged broom, commencing at the bottom and moving it gently towards the extremities of the branches. The removal of such leaves that are now incapable of elaborating sap, tends to improve the condition of the tree by exposing the branches to the sun and air; and, consequently, they become more ripened and better prepared to withstand the severity of winter. Preparations should now be made for filling up all vacancies on walls. Instead of making a hole merely large enough to receive

the roots, it is necessary to trench the border to its full width in front of the vacancy, and on the right and left as far as can be done without interfering with the roots of the adjoining trees. If the soil is exhausted by the roots of the former trees that it supports, it should be replaced with fresh soil entirely or in part, as circumstances may allow.

STOVE.

The weather lately has been favourable for ripening the succulent shoots of free-growing plants, when opportunity offers, therefore, do all you can to ripen the young wood, for it is only by so doing that you can expect to get well through the winter. Place all flowering plants in conspicuous situations. You may now allow the temperature to decline at night to 60°.

GREENHOUSE AND CONSERVATORY.

Air to be admitted on all favourable occasions, as it will not now produce the withering effects upon the foliage that such an exposure would do in spring, to shut them up closely after being recently so fully exposed, would induce growth and produce disease. Cinerarias, if intended to bloom in early spring, to receive their final shift. Pelargoniums to be placed pretty close to the glass to prevent elongation, the principal shoots to be pegged out at regular distances, and the superfluous ones removed. Green fly to be kept down.

PITS AND FRAMES.

See that the Mignonette has a very light situation, either plunged close to the glass at the back of a frame free from damp, or on the top shelf near the glass in the greenhouse. Cuttings that are not struck to receive a gentle bottom heat. Keep as many cuttings in store pots as possible for potting off next spring. Put in cuttings of Calceolarias, they strike freely now if inserted in some light, sandy soil, in a cold frame or under hand-lights, to be protected from frost. Provide straw shutters or whatever else it may be intended to use for covering, that they may be in readiness to protect the plants from frosts. The plants to be exposed to air on every favourable opportunity, to check growth and to get the wood firm. Water to be withheld until it is absolutely necessary, and then to give but a moderate supply. Verbenas in store pots and growing freely to have their tops pinched off; the same with Petunias and other such free-growing cuttings. Give all the air possible even at night when mild.

W. KEANE.

THE CRYSTAL PALACE SCARLET GERANIUM, TROPÆOLUM ELEGANS AND STAMFORDIANUM, AND NEW VARIETIES.

I AM so pointedly cross-examined in the last No. of THE COTTAGE GARDENER, at page 46, by a correspondent from Pilsby Nurseries, near Clay Cross, about the Crystal Palace Scarlet Geranium, that I cannot refuse to answer.

In the first place, he is too hard upon "A. P. W." All that he says is, no doubt, quite true: he is only

wrong in the opinion, and we are all of us just as liable to wrong ideas and opinions as "A. P. W." He is the lucky godfather of Tom Thumb, and the able supporter of Tom's merits. He is also an able penman in our calling, to whom many of us are deeply indebted for sterling practical instruction founded upon a true scientific basis; and as such he deserves our respect even in his errors, which have been many of late—and who are without them?

I did not send my seedling to Heckfield that I am aware of, but visitors took cuttings of it to scores of places, and probably to Heckfield; and as the kind was not named by the raiser, every one who partook of it at the time had a right to name it according to his or her fancy. And there is nothing more likely than that it received the name of Prizefighter in Kent, just as "A. P. W." says; for it was in Kent at the end of 1843, and beyond Blackheath Park, where another good Prizefighter was doing it at the time: and Mr. Alexander Therkeld, who, I believe, is now a nurseryman near Belfast, took it to Kent after nursing it from the seed, and after handing over the stock of it to Mr. Cole, his successor at Shrubland Park. Mr. Toward, Her Majesty's head factor at Osborne, sent Mr. Therkeld to me from Bagshot Park, and with him the King of Scarlets Geranium—then, or in 1840, the best scarlet in Bagshot Park. The Crystal Palace plant is of that kingly breed, and for all its merits the world is indebted to Mr. Therkeld and his successor, Mr. Cole; for your humble servant was then so smitten with his friend's General Tom Thumb, that, were it not for these two worthies, you should never have heard of this or that prizefighting among seedling Geraniums, which it is quite time, now, to give place to a more profitable use of our extra steam.

Six other claimants for the honour of having been the first to send that Scarlet to Sydenham are on my books. Mr. "A. P. W." is the seventh—the lucky number; and the Messrs. Smith, Nurserymen, Norwood, happened to send it there before any of them, as Mr. Gordon, of the Crystal Palace, assured me on the Foresters' day. He was at the bedders there from the first start; and that Geranium is in the first list of plants ever made in that garden and in their garden-book to this day. Mr. Gordon has that original book, and Mr. Gordon told the tale to me just as I now relate it. He is confident their next-door neighbour of the Norwood Nursery first supplied that Scarlet. But still "A. P. W." and every three letters in the alphabet may have supplied it also, and every trio under a different name; and every one may think his batch was in first—but Mr. Gordon can put them all right.

TROPÆOLUMS.—We are warned in that letter from Pilsby Nurseries against a spurious *Tropæolum elegans*, and, I should add, against a spurious *Stamfordianum*, of which I have farther account, wide as the poles asunder; but it is hard of him to wish to take the bread out of my mouth. He says, "Mr. Beaton would have enough to do to quiet the grumblers, if they received such a worthless thing as I am alluding to"—namely, a bad kind of *Tropæolum*. Why, I would not put down one grumbler for all the bedding plants on earth. There is a wonderful deal to be learnt from a grumbler. It was from grumblers that I learned the absolute secret for enjoying life among my fellows—that is, never to grumble myself. Since I gave up grumbling I have renewed, as it were, my age, my appetite, and my digestion, and I feel as a feather to what I used to be.

But the great difficulty at first was to find room for *Tropæolum Lobbianum* to bloom in winter—not in blooming it. The best hit at that time was the one which suggested the plant to be turned out in a spent border at the back of a greenhouse in April, to train it all the season over the whole back of the house, and when it was up to the top of the back wall to begin to strip off the bottom leaves, and to go on stripping them

to near the top of the wall, and make the shoots turn back on themselves, to be trained slantingly downwards the whole winter, when thousands of flowers could be had from an ordinary greenhouse. That ancient way would pay now in some quarters, and in Covent Garden. But people grumbled at the extent of room and at the time taken in doing the work, never at the want of flowers. Now, however, a better plan, or a more handy means of getting sufficient *Lobbianums* in winter, is the practice of pot culture. The plan of pot-bound all the summer, and a shift not over-liberal in the autumn, and a plunge into bottom heat till that pot is full of fresh roots, with a few degrees warmer than a common greenhouse, just as our Pilsby friend directs in his useful communication, seems to obtain the height of our success at present for this class of winter bloomers.

Tropæolum elegans was the first to go by the frost. At the Experimental Garden it went before the *Heliotropes* or any other plant in the Garden. Even now (October 24th), there is plenty *Heliotrope* in bloom out in the gardens about Surbiton, and I should not wonder to see again in London the *Dahlias* and the *Chrysanthemums* in bloom together in the open squares. But I have a new contrast with *Tropæolum elegans*. The large plant of it, which gave such trouble to keep it as it should be, was in a box on the sill of my "keeping-room" window, and a large *Jasminum nudiflorum* was round that window for years; but this season it is not nudiflorum or anything like that. It was in bloom this season on a north aspect a month sooner than usual—by the end of September—and without shedding a leaf; it is now in full leaf and in full bloom, with the *elegans*, also in full bloom trained over it—quite a sight for beauty of contrast. And I would recommend plants of it to be reared specially for such a purpose, for covering the lower parts of any permanent climbers or pillar plants; and the way to manage them is well suggested by the practice in the Pilsby Nurseries—to get winter bloom, to grow the plants in small pots the first season, and to plant them out next year, for this kind of covering, if not against the nudiflorum like mine.

A plant or two of the *Perilla* I would also recommend to be used in sill-boxes in front of a window. I had two of them this season in that box for the *elegans*, and they were admired more than all the rest. Looking out one which had a peculiar rich shade of deep purple from them, which is never seen when the *Perilla* is looked down upon as when it is in beds; and looking in from the outside the tint is nearly as rich, the plants being both ways about level with the eye. Even now the tint is richer than earlier in the season.

Next year if I am spared I shall have two plants of the Purple Orach in the same way, one near each end of the box, to be allowed to rise the matter of two feet or so, and two other plants of the *Perilla* to divide the middle space of the box—the *elegans* for a groundwork to the picture, so to speak, and to scramble up each side of the window, and over the nudiflorum, and over the sides of the box. On the garden side of it, as at present, I would make no objection to a couple or four plants of my best purple *Nosegays* to fall in between the standard Orach and *Perilla* for a change; but, without them, I calculate upon a crack orange, and such as you never saw produced yet by stained glass windows. Depend upon it there are some good moves yet to be revealed by the use of plants which cast rich reflections of shade, in a window between the eye and the sky line. Perhaps a new colour altogether may be hit out of such contrivances.

The most pleasant flower to my eye to look over from a sitting-room window is that of the old Unique Geranium, but it is not nearly so rich as the leaves of the *Perilla* in the same way. How would it look to elevate *Perilla* plants up into a vase, so as to see through them against the clear blue sky? That I cannot tell; but I can vouch for it, that looking through out of a room is as pleasant

to the eye as the best arranged flower-bed that ever was planted.

But I am running a-head of these *Tropæolums*. I had a glance of some new kinds which were sent up from the country to our office by a correspondent signing "Wm. M.:" one of them, numbered 40, is the best of all the race that I have seen, and one, too, that would gladden the hearts of the majority of the Floral Committee, for this reason—it is the best shaped, and is of the best substance that we have seen in this family. It is of the deepest orange-scarlet, with a darker shade in the throat, and is larger than the *Brilliant* from the Continent. Another one, numbered 30, is nearly as large, and of a lighter orange, and less symmetrical in the shape. It is said to be from a plant in a pot in the greenhouse for the last twelve months; and a third kind, No. 20, is rather better than the last, and said to be a fine summer flower. Flowers of *Triomphe de Gand* and of the old *Brilliant* were sent along with these for comparison, and my own elegans enabled me to compare them with it also; but without such aid I could easily recommend the three for general cultivation; and No. 40 would have gained a certificate at the Meetings of the Floral Committee. The correspondent who sent them seems to be well up to the winter use of these flowers, and his management of them for that use seems little different from that of Pilsby Nurseries as was explained last week. He says, "The greatest drawback I find is to get a variety to come at all near to its original colour in the sunless dark months of winter. No. 40 apparently will keep well to its colour. Even now it is from under glass in a greenhouse. No. 30 I have proved to be good last winter, and, as you will see, it is of the *Lobbianum* type; it has been growing in a pot only seven inches across at top. I find all these *Tropæolums* to flower best in winter, *confined rather than liberally potted*. In summer, I water those of them that I intend for blooming in the winter with liquid manure, but do not shift them much. And No. 20 does not keep its high summer colour so well as the other two." The italics are mine, to show where I believe the whole secret to rest for getting these fine things to pay for their keep in winter; and if you add the Pilsby plan of a late shift in September, and a plunge in bottom heat to fill the pot quickly brimful of roots before the fresh start of growth can much extend, and not to overwater them in winter, you are in possession of all the facts which our present practice lays down as safe guides for the blooming of all kinds of hybrid *Tropæolums*. If I were in possession of a good garden and glass houses, if ever so small, I would employ none but first-rate gardeners; and I would make it worth their aim to satisfy my fancy in flowers; and I would put just as much stress, or more, on a good supply of winter flowers as on my beds and ribbon-borders. Of all flowers in the world these *Tropæolums* are the best for cut flowers, as no others will keep half so long in water and give less trouble; and now there are five or six very good sorts of them for that very purpose, and also the very best instructions to do them in such manner as will best pay.

D. BEATON.

PLANTING A VINERY AND PEACH-HOUSE.

I HAVE a fruit-house now ready for the reception of Vines and Peach trees. It is 45 feet long and 12 feet wide, and is divided into two compartments—one for Vines, the other for Peaches. I propose to plant Vines and Peach trees respectively in the front border outside, and to lead them through under the front lights, and train to a trellis fastened under the rafter at 6 inches distance. The entire floor of the house is covered with good compost mould to the depth of 2 feet, and the back wall of the house is 16 feet high. How would you recommend me to occupy it? Will Vines in that compartment do planted in the floor close to the back, and trained up it? And would you put Peach trees similarly in their compartments? Or would you plant them in the middle of the floor as riders to those let in

through the front wall, and train to the trellis above them?—AN OLD SUBSCRIBER.

[There may be reasons for planting outside as you propose; but if the floor inside is much on a level with the outside border, and by holes and arches communicates with it, we would plant the front Vines and Peaches inside the house not far from the front, so as to secure the stems of both being always covered, and we would train both at from 12 inches to 18 inches from the glass—the Peaches on a trellis, the Vines some 4 feet apart. We would plant Vines at the back of the house at a similar distance, and when they reached the top of the wall train them down. In the Peach-house we would have the trellis in front somewhat circular, and leaving at least an open space of 4 feet or 5 feet between it and the wall, so that the sun may play on the trees against the back wall. If you take the trellis quite up the roof, when the roof is covered the back wall will do no good with fruit trees.]

PUTTERIDGE BURY AND ITS GARDENING.

THE advantages which an extended railway communication gives to the community at large are felt alike by the professional gardener and the amateur. The former is enabled to visit metropolitan and other horticultural shows, and now and then, perhaps, take a holiday to see some distant garden of high standing; while the same advantages are offered to the amateur, with the addition that his means often enable him to visit such places oftener, and to take longer journeys to make himself acquainted with certain features in gardening which some places have the reputation of possessing.

On one of these points, which is that of flower gardening, I have no hesitation in claiming a prominent position for that of the gardens at Putteridge, which I had the good fortune to see about the middle of September of the present year; which, in so far as the progress made by bedding plants in general at other places, might be considered as being the same as the early part of August in other seasons; while, to be guided by the aspect of the weather and its effects, it more resembled the middle or end of October. But as our facetious writer *Punch* predicted no summer this year with far more accuracy than the generality of almanac-makers or the more newly introduced order of *astro-meteorologists* as they call themselves, it is only necessary to say that some things at Putteridge Bury fell short of what they would have been under ordinary seasons; but the number of these were so small, and so ably made up by other things that had done so well, that the most fastidious could scarce wish for more bloom than appeared to have adorned the flower-beds and grounds a few days before my visit; for, be it remembered, the heavy rains at this late season destroy the opening flowers very quickly, and there had been several such days prior to the one I was there, and that one also was of the same description. But to give the reader a just idea of the place, it is proper to enter into some general description of it as a whole.

The mansion of Putteridge is seated on the top of one of those ridges of hills which form so conspicuous a feature in the scenery of this part of Herts and the adjoining county of Beds. The thriving town of Luton lies in a deep valley about four miles to the south of it, and from whence there is a good rail communication to London and elsewhere by a branch to the Great Northern line at Hatfield, and to Leighton Buzzard on North-western on the other side to Birmingham. Rail accommodation, therefore, to within four miles of the place is thereby secured.

The neighbouring district presents the usual features of an agricultural character. Good Barley, thriving fields of Turnips, promising a store of good mutton by-and-by, and Clover fields equally inviting, give the whole an air of good farming which is not to be met with everywhere; and as manufactories of a noxious or disagreeable kind are unknown, we may readily accord it that character for salubrity which it has so long and deservedly had. An industrious rural population, the female members of which are much employed in the plaiting of straw and making it into ladies' bonnets; which latter, with similar fancy articles, form the staple productions of Luton. We may give the reader a sufficient idea of the neighbourhood.

Returning, therefore, to Putteridge, it is right to say that, although there is a great descent from thence to Luton, the mansion and grounds stand on a comparative level. The carriage front is on the north side, the offices are connected to it on the west side, and these stretch by connecting links a considerable distance until they join the kitchen garden—an excellent enclosure

with a good wall all around, and of which something will be said hereafter. Westward of this kitchen garden is another one, which, however, mostly consists of those indispensable adjuncts to such a garden as Putteridge—hot and cold pits, standing space for potted plants, and the many other et ceteras which form so important an auxiliary to the success of the whole, and which a gardener is sure to spend a long time in examining in the spring months. This area of glass structure is itself bounded on the western side by the no-less-useful appendage to all gardens—the “background,” where dung, compost, and the many requisites of a garden find a depository, and where turf-pits and the many makeshifts of a large place are sure to be called into action at the fitting time, and all in their way useful.

This outline of the various departments will give the reader some idea of the place. The mansion, offices, kitchen garden, framing-ground and background succeeding each other in a westward direction; while the space south of these and also eastward of the mansion is devoted to the pleasure-ground and flower garden, which it is better, perhaps, to describe also in a general way before entering on the details of the management.

The mansion is one of those snug, comfortable residences in which the utility of a dwelling has not been sacrificed to the architectural beauties of the structure. Neat in its outline, it is kept still more so outwardly by frequent painting; it being one of those cemented houses requiring this to be done. Inwardly, I believe, it is also scrupulously neat. The buildings attached to it are also painted either white or a very light stone colour; and against a wall, which joins the south-west corner of the mansion, separating the pleasure-ground from the offices, there is a roofed-in verandah of some length uniting with a conservatory. This verandah forming a nice, dry promenade in wet weather, and a shady one in sunshine.

The conservatory is a useful span-roofed structure, well filled with flowering plants common at the season, and many novelties not met with everywhere: perhaps as gay an object as any was some pots of the spiked Cockscombs, which Mr. Fish observed were deserving more attention than they often receive. Some other ornamental work connected this conservatory with the south-east corner of the kitchen garden; and the southern wall of the garden was used as a sort of conservatory wall, against which was planted some New Holland and other greenhouse plants and creepers, as well as Tea and other Roses; the border in front of it being one of those striped ones Mr. Fish is so famed for.

Eastward of the mansion the ground recedes, but is raised so as to form a wide terrace, with a considerable space of grass and gravel. A sloping bank unites it with some other pleasure-ground below, which consists mostly of shrubberies, Pinuses, &c. This eastern terrace extends considerably in a straight line beyond the house on the north side, and still more so on the south side; the same level being observed throughout.

On the south side of the mansion and facing its centre is a sunk panelled flower garden with a fountain in its centre. This garden, which is square about four feet below the terrace that surrounds it, of which the eastern one described above forms one, and determines the level of the other three sides. A broad gravel walk surrounds all four sides of this panel, with ample turf margins, &c., and the panel itself is approached by steps at the centre of its sides. These gravel walks which surround this panel unite with others diverging to other parts of the grounds. The south wall, however, does not extend westward, but points to a glade of turf about twenty-four feet wide, between two rows of circular beds of ten feet diameter planted in pairs, and in an inimitable manner, which, as they form an important feature in this place, I will venture to call them the avenue of beds. Circular beds of larger dimensions than these were also scattered over the ground in a promiscuous manner, but in no instance crowded, and not in such a way as to injure the effect produced by the avenue. The sunk garden, the ribbon-borders, or other features, and beyond them circular beds, or nearer to the boundary of the pleasure-grounds larger beds of irregular shape planted with taller plants—as Dahlias, Hollyhocks, Roses, and the like—were all, nevertheless, edged with a something of lower growth.

Shrubs, specimen trees, and the ordinary outline of pleasure-grounds concealed the boundary fence in most places from the view of the principal walks, and gave that clothed appearance to it which is so essential in winter; and as they extended over many acres, the variety thus given, aided by some irregularity given in diversifying the surface by cuttings and embankments to form some rockwork, fernery, and other things at a considerable distance

from the main parterre, gives this place a claim for distinction which its somewhat level position would not have obtained for it. But as the highest merit of the place is in the admirable manner in which the flower-beds are managed, I fear I cannot begin them in the present chapter, but will enter at some length on them in my next.

J. ROBSON.

(To be continued.)

OUT-OF-DOOR FUCHSIAS.

WE have some plants taken up which we want to keep until next season. They are now potted, and stand in a shed where they can have a little light, and be protected from frost. They are yet quite green, and have flowers on them. Should I prune them in now, or in winter, or in spring?—ALPHA.

[As long as they remain green we should leave them alone, though it is a subject on which doctors differ. Whenever, after using the syringe on them frequently, they began to dry up, cut them in a little: but for the purpose you specify, it is best not to prune finally until the spring, as some pieces may decay, and then you can more easily make up gaps. They should be pretty close pruned then, but not so close as those intended for the house.]

PROPAGATING TRITOMA UVARIA—SOWING SEEDS OF ACHIMENES AND GLOXINIA.

I HAVE a plant of *Tritoma uvaria*, which I propose cutting into sets as Mr. Beaton describes in *THE COTTAGE GARDENER* (Aug. 1859). On examining the root, however, I am fairly puzzled how to set about it: it resembles a bunch of small Carrots. Where am I to look for the eyes?

Supposing that by your assistance I successfully cut it into sets, how deep are they to be planted, and will they require any protection during the winter? The place I write from (in Suffolk), is cold and exposed to the wind.

Also, will you inform me how soon I must sow *Achimenes* and *Gloxinia* seed in a hotbed to bloom in a cold frame the same year, and early enough to mature the roots before the cold weather?—J. D.

[Every place in your county is cold enough to warrant a departure there from some of the garden practices of the “shires,” as you say in Suffolk. Your *Tritomas* are yet too young to be divided. By-and-by you will find a large fleshy “root-stock,” as gardeners say, like the underground stems of an old *Canna*; and on that root-stock, or ground stem, the eyes of *Tritoma* are seen, just as they may on *Canna* “roots,” or those of almost any kind of *Gingerwort* plant. These root-stock eyes begin to grow at this season of the year; and by the spring the foremost of them are generally too forward, and the latest too much behind, for amateur propagation. That suggested the idea of cutting them exactly like Potatoes for “seed” in November, when all the eyes are upon the same footing of forwardness; and in cutting one tries to get more or less of the small carrotty roots to each piece, but they are not quite essential to success. These cut sets are then on an equality, and so would Potato sets if they were cut in November; and who knows, if Potatoes were cut when all the eyes were in the same state of forwardness, if that would not in some measure prevent the disease? When we cut Potatoes as late as the middle of April—the right time to *divide* *Tritoma* roots, not the best time to *cut* them—the top eye or eyes are so much more forward than the rest, that rows of them come earlier by two or three weeks; but the top eye or eyes of *Tritoma* are still more forward then, and the back ones more backward. Now when one cuts *Tritomas* or Potatoes in November, the “sets” of both require exactly the same kind of treatment till planting time: also the very same kind of soil to do best in, the same depth of planting, the same distances from set to set and from one row to another. During a long winter one would need to see that Potato sets did not get too dry, or too damp, or too cold, or violently hot; and there is not a hair’s breadth of difference between them and *Tritoma* sets from the cutting till the next crop is ready to take up. We have now twenty-two plants of *Tritoma* as nearly as possible of the same size, strength, and looks from the two “roots” which we divided last November. If we had left them uncut till last April we should now have four or five of them stronger than they are at present, and all the rest probably not half so strong—more resembling “a bunch of small Carrots,” like your plants, than anything else.

You cannot manage *Achimenes* as you propose. There is no one in all Suffolk who could do so by the same means. But the 1st of January is the earliest time you can do *Achimenes*, and every week on to the end of April they will do to be sown. But why sow at all? Roots are much less expensive in the long run.—D. B.]

IS CLETHRA ARBOREA HARDY?

DOES Mr. Beaton mean to say (page 354), that *Clethra arborea* is grown at Kew as an entirely hardy plant? We much want a good account of hardy-flowering shrubs. They deserve far more general cultivation than they get. Cannot THE COTTAGE GARDENER give us some papers on them?—H. M. E.

[*Clethra arborea* is one of our oldest conservatory plants, at which people of taste turn their backs when they see it a huge skeleton of tall naked stems and half-clothed branches waving in the wind. Yet it might be made as inviting as those other evergreen old plants mentioned at Kew by our coadjutor, Mr. Beaton. We thought at the time he meant *Clethra alnifolia*, a very low, bushy shrub of the old school also; but, probably, *arborea* was introduced by him for some private monition to the gardeners at Kew, or at some ancient country residences.

We agree with you that we want more recent accounts of hardy-flowering and ornamental shrubs; but we fear, like the *Clethra arborea*, from the rage for novelties and fancy decorations, one could hardly get a hearing who took a rational view of the subject. Nurserymen do not find the subject inviting enough even to mention the names of such things in their catalogues; and no instructor can be prevailed upon to hold forth to empty benches, or add to the contents of the waste-basket. But we shall look to it.]

STOVE ORCHIDS.

(Continued from page 35.)

ORCHIDS ON BLOCKS.—There are many of the most rare and very lovely Orchids that do not thrive well in either pots or baskets. In their native habitats they are found growing on branches of trees, the roots clinging to the branches or swinging in the air, from which they appear to draw their nutriment. We imitate this mode of natural growth by placing such plants on logs of wood suspended from the roof of the Orchid-house. I have used various kinds of wood for this purpose, and from many years of experience I have come to the conclusion that the branches of the *Robinia pseudo-acacia* are the best for them. It is the common hardy *Acacia*, commonly so called, a tree now well known. I use it without the bark, which easily peels off when the branches have been cut off for a year or so. The next best, when the *Acacia* cannot be procured, are branches of the Cork tree, then of the Oak, and lastly, of the Elder tree, any of which will answer the purpose. The Cork branches I have used with the bark on, because the bark of that tree does not so easily decay. The objection to logs with bark on is, that when the bark decays woodlice and other insects secrete themselves behind the bark, and issue thence at night to prey upon the young roots, shoots, or flower-stems.

The way to fasten the plants to the logs is easy enough. The log being ready, with a piece of wire fastened to it to suspend it by, then have ready some small wire and some green moss. Hold the plant with the hand close to the log, and also some moss, then wind the wire round the log, catching hold of the plant at the same time, but be careful not to let the wire press too tightly on the plant. The part best to lay the wire upon is that named the rhizoma, or root-stock, which generally is of a hard woody texture, and, consequently will bear a gentle pressure. At the same time place a third layer of green moss on the log, and some on each side of the plant. If it should happen that the root-stock is soft and fleshy, a little moss should then be put under the wire to prevent it from cutting the root-stock. The plant will, when it begins to grow, put forth new roots, and even the old living roots will send out branchlets of new roots. Some of these will catch hold of the log and wrap round it. Then if the root-stock swells, and the wire appears to strangle it, let the wire be cut in pieces to prevent further mischief. Some delicate species are better without any moss excepting a bit under the wire. These species I shall give a list of in the group below.

Size of the Blocks.—When the plant is large it should be placed upon a large block, but in order to lessen its weight it

may be split in two. Such large blocks should have a stronger wire, which should be fastened to each end and suspended from the centre. Small plants, on the contrary, should have small logs, and the wire fastened to one end only, and a loop twisted at the other end to suspend it by.

I have been rather minute in describing the different operations of potting, basketing, and blocking, which if carefully and rightly performed at the proper season will leave the plants ready for the next equally important operations of watering and syringing—operations that require particular and constant attention during the whole period of growth.

WATERING.—Plants in pots and baskets, when newly placed in fresh compost and just beginning to grow, sending forth new roots and shoots, should have very moderate supplies of water, and that should be given round the edges of the pots or baskets, so as not to wet the plant at all. I use for this purpose at that season a small pot, with a long small spout without a rose. The operator has with such a pot a greater power over the quantity of water he ought to give to each plant. When the young shoots have half formed their new pseudo-bulbs, and the days have become longer and the sun more powerful, more water may be given, and it may be extended close up to the plant. As a general rule, let the operator observe never to water an Orchid till it requires it, and let the quantity given be in proportion to the size of the plant and its state of growth. At the base of each new pseudo-bulb there is a kind of sheath. This sheath holds water; and when that bulb is young this water, lodging in the sheath in dark cloudy days, will have a tendency to rot the young shoot. In such a case the sheaths had better be carefully torn open to let the water escape. As the pseudo-bulbs increase in size and maturity the sheaths decay, and may then be removed entirely. When the pseudo-bulbs have reached this stage the greatest quantity of water should be given. Many of the *Dendrobiums* may be deluged with water daily; for upon the free application of water at that state of growth depends the full development of the growths. In their native climates there is, as is well known, a rainy season—that is, it rains heavily almost every day for many weeks: therefore it behoves the cultivator to give abundance of water, in order to get his plants well grown when the growing season takes place, more especially if the summer should be hot and dry. When the pseudo-bulbs have attained what the grower may judge their full size, then gradually reduce the quantity of water till the dark days of autumn arrive, and then no more should be given than will prevent the shoots from shrivelling too much. Frequently in winter once a-month a small supply of water will be necessary.

SYRINGING.—The same precautions must be used in syringing as I have described above for watering with the garden-pot. It may be freely used during the summer morning and evening; but in spring and autumn the syringing should be done only in the morning, when the sun is likely to break forth clear during the day. To create a moisture in the air in the evenings of such days syringe the pipes and paths only. In all cases be careful not to syringe over the flowers, for the least drop of water will injure their beauty.

T. APPLEBY.

(To be continued.)

MAKING A PIT FOR TENDER BULBS.

It is well known that the *Belladonna Lily*, *Ixias*, *Irids* of the tenderest kinds, *Alstromerias*, many of the hardier *Amaryllids*, *Japan Lilies*, *Agapanthus*, &c., bloom well for years when planted at the foot of a fruit wall of a hothouse, or even greenhouse. They would do almost equally well at the foot of any other wall where they could be treated with plenty of moisture and sun when growing, and comparative dryness and protection when at rest; the whole of these would do equally well in a small pit—say five feet wide: the bottom thoroughly drained, an open stratum of rubble above that, of nine or twelve inches, and a staple of sweet, sandy loam of eighteen inches, over all. This would enable all the bulbs to be planted deep enough, and, provided that the bottom was solid below the rubble, there would not, in the case of the larger bulbs, be much chance of their roots getting too deep. With such a convenience, the staple soil could be regulated with peat or rotten leaf mould, according to the requirements of each kind; and, once established, the bulbs would bloom with a vigour that could rarely be met with under mere pot culture. As such a pit would need protecting only in the winter and spring months, the height of

its walls need not be more than two feet above the soil inside at back, and one foot in front, making four feet as back altogether, and three in front, the half, if deemed advisable, being below the surrounding level, so that all may be easily seen and examined, provided that drainage can be easily accomplished. If there be any difficulty in this drainage, we would scarcely sink the bottom of the pit below the surrounding level. The walls will be neatest if of brick, and, but for the expense, we would make them of fourteen inches and hollow. If the wall were only nine inches, that we would prefer being hollow. The wall plate all round would keep all firm and secure, and though it would be best to have rafters from back to front in the usual way, they would not be essential. For covering such a pit, we would use chiefly wooden shutters, as the cheapest in the end, though covers made of asphalt felt would do very well. A few glass sashes would be necessary (say for a third of the length of the pit), in order to give light to those kinds that grow in winter and very early in spring. The wooden covers would keep all those safe that rested in winter or did not appear above ground until the spring. Were it not for the expense of the thing, we would have no objection to have glass all the way, and wooden shutters, to be used only in extreme weather. Keeping economy in view, much may be done with wooden shutters almost alone. Of course, in planting, the period of growth should be considered, so that the winter growing and summer growing should be kept distinct. The interest arising even from the care required to manage such a pit would be very great; and the pleasure would be increased by having something fresh to look at for the greater part of the year, from a few Hyacinths early in spring to Gladioli and Belladonnas late in the autumn. Though we have spoken of a brick pit for neatness, that is not at all necessary; a double wall of stout boards, with four inches between them, stuffed with sawdust, would be equally suitable. In fact, a wall or paling of slates, backed with grass turf, as a turf-pit, would be as good as anything, so far as protection went; but the great drawback to all such contrivances for this purpose is, that they would be apt to harbour mice and other vermin, which might soon destroy the finest bulbs. On this account alone we prefer brick, as affording no nestling-place. A narrow pit of this kind, some twenty, sixty, or more feet in length, according to taste and convenience, would, except in the few dark months in the year, yield a pleasure second to none that a garden could afford; and that pleasure will be enhanced in proportion to the skill, attention, and labour bestowed. The short cultural notes in the body of the catalogue will help the uninitiated in the right management; and such a pit, and such a mode of using it, we heartily commend to all our correspondents, and especially to those having suburban residences, with little ground to spare for floral display.—(*Carter's Gardener's Vade Mecum.*)

WINTERING CINERARIA MARITIMA.

WHAT shall I do with this, still standing out? How shall I propagate it, it damps off so?—LUCY.

[This Cineraria, so far as we know south of the midland counties, is hardy, and will stand uninjured in common winters. The height may be regulated by cutting down in spring to any height, or close to the ground. If you have doubts, you had better take up some plants and keep them under glass in a cold pit, or with a little protection. You will find it troublesome to propagate it now; but jog our memory, and we will tell you how to strike it as easy as Couch Grass in the spring.]

EARLY STRAWBERRIES WITHOUT PREPARATION.

My employer wishes to have Strawberries early in March; but I have none potted, and fear that, if I take them up out of the ground, however large the pots I give them, they will not yield a large crop. Pray tell me how to act.—TYRO.

[You are quite right in stating what is likely to operate against general success. We have always stood out in preparing such plants—young ones, if possible—and to have them potted, and the pots well filled with roots before the autumn. This abundance of roots and the ripening of the bud we consider the great elements of success. We will enter on that subject ere long. Meanwhile we will tell you how we did once in similar circumstances and obtained very fair success, though it would be wrong

to say that every plant should bloom and ripen fruit so early. We found that by the 1st of November we had a lot of half-decayed dung, not so exhausted but it would yield a little heat; and that mixed with some leaves and rubbish from the pleasure-ground, we threw together in a heap, and put an old three-light box over it. Ere long the bed produced a general heat of about 80°. This done, we went to the Strawberry-borders with a large trowel and a little fork in our hands, and carefully selected a number of plants that were compact rather than large, and which had one or two good prominent buds instead of several weaker or insignificant ones. According as was most convenient we used the trowel or the fork, or both, to get up as good a portion of the roots as possible, and a lump of soil nearly as big as our fist near the collar of the plant; and then the plant and the soil were squeezed into the smallest sized pot we could get them in—a four, five, or six-inch, according to the size of the plant and the ball, and some fresh mellow loam was packed firmly round it. The pots were then plunged in the rough hotbed up to the rim, and even above it, whilst air was left on night and day, back and front; the object being to fill the pot with fresh roots without doing much to excite the bud into action. In a fortnight a good many fresh roots were covering the outsides of the ball; and in three weeks the pots were lifted up and set on the surface of the bed, now getting cold; and on the day after Christmas the plants were placed in a vinery where the fires had just been lighted to commence forcing. The change from moist to dry heat at once was counterbalanced by setting the pots at first on damp moss. Hardly any water was given to the plants whilst in the bed, and but little in the house until the bloom-trusses appeared, and then manure water was used. A few fruit were gathered in the first week in March, and a good supply by the middle of the month. We hope you will be equally successful; but such plans, though allowable in an extremity, should never be depended on for general application.]

THE APPROACHING EXHIBITION OF CHRYSANTHEMUMS AT THE CRYSTAL PALACE.

WE have perused this schedule of prizes with great interest. It is composed for three classes of exhibitors nominally, and literally for two classes only—that is to say, amateurs and nurserymen are to compete in two distinct classes, and the third class is open to all. But the great test of improvement is this, all the best prizes are reserved for the best gardening, for those who can and will exhibit the Chrysanthemum, be it Pomponé or a large-flowered kind, as we have always maintained there should be, and that is on single stems. But for nurserymen who must do them for all tastes, and for bad tastes, a class is reserved for single specimens, and “no restriction as to size of pots or number of stems” (open to all). In the first class amateurs are offered £5, £3, £2, and £1, for the first, second, third, and fourth best collection of six large Chrysanthemums grown on single stems; and £3, £2, and £1, for the best three such collections to nurserymen. Then single specimens on single stems open to all, and for all these the pots not to exceed eleven inches in diameter.

Another class for single plants which may be made on the old model of six plants in one pot, and sixty sticks to a plant, no restrictions here for ever so many stems, or for the size of the pot, and all may contend.

Pomponés just in the same way, and value of the prize money, with this addition—one more class for that elegant way of training them, called pyramidal, on one stem, in eight-inch pots, and open to all. Three golden sovereigns are here open to the best, and open to all. There is encouragement for good and careful gardening! Classes for cut blooms in twenty-four, twelve, and six kinds of both strains, are also set specially apart for amateurs, for nurserymen, and for all comers.

OILING LEATHER.—The *Scientific American* says, that oils should not be applied to dry leather, as they would invariably injure it. If you wish to oil a harness, wet it over night, cover it with a blanket, and in the morning it will be dry and supple; then apply neat's foot oil in small quantities and with so much elbow grease as will insure its disseminating itself throughout the leather. A soft, pliant harness is easy to handle, and lasts longer than a neglected one. Never use vegetable oils on leather, and among animal oils neat's foot is the best.

FLOWERING PLANTS UNDER VINES.

COULD I grow Vines in my greenhouse without hurting my plants? My employers are anxious to have the Vines, but not if they would interfere with the growing of the Fuchsias and Pelargoniums and other plants for competition. The house is a lean-to, 32 feet long and 10 feet wide, 6 feet high in front and 10 feet at the back; the front wall being 3 feet of glass, and 3 feet built with brick. My employers propose to have one Vine up each of the rafters, which are 4 feet 3 inches apart. If you think they would succeed, please to name the sorts that would be likely to do without any fire, as there are no means of heating the house.—GREENHAND.

[Of course you do not mean to keep your Geraniums in this house, which you cannot heat in winter. The Fuchsias might be laid on the floor, and covered up in severe weather. The Vines will just so far interfere with Geraniums and Fuchsias that in dull weather in May and onwards there will be more shade for the plants, and this will be more prejudicial to the Geraniums than the Fuchsias. With a little care, and setting the plants rather thinly, and spurring the Vines, good specimens of both can be grown under such circumstances, and especially of the Fuchsias.]

THE COTTAGE GARDENER volumes commence with the first Tuesday in October, and the first Tuesday in April. The binding in one or two volumes is a matter of taste and convenience.]

NOTES ON FERNS.

CERATOPTERIS THALICTROIDES. Brogn. (Synonyme—*Ellobocarpus oleraceus*, Kaulf.) This is a very curious, aquatic, annual Fern, with delicate green membranous fronds, viviparous in a high degree. Sterile fronds bi-pinnatifid, with oblong obtuse segments, drooping, about eighteen inches long. Fertile fronds two feet or more in height, erect, much divided with linear divisions. Veins of the sterile fronds distinctly reticulated; those of the fertile ones have the same character, but developed in a less degree. Sori produced upon the oblique lateral veins, so as to form a line on each side of the midrib, and covered by an indusium formed by the reflexed margin of the frond. Stipes somewhat square, furrowed, very succulent. The vernation is fasciculate, and what little rhizome is produced is erect.

This highly curious and interesting Fern is an inhabitant of pools and other quiet waters in the tropics of both hemispheres. It often grows wholly submerged, and is so very prolific, that, if a frond be broken off and thrown into water, it is sure to produce several young plants. It grows freely from spores also. To be cultivated in perfection it should be grown in good, rich, loamy soil, and the pot half plunged in water in the stove. It is somewhat apt to damp off in winter: a few young plants should, therefore, be secured in autumn, and these should be kept moderately moist—that is, only a little wetter than ordinary Ferns; not standing in water during winter. As soon as the days begin to lengthen give it a moderate shift, and, when established in the fresh soil, place the pot in a feeder, or saucer, of water, and as the season advances treat it as an aquatic.

The name *Ceratopteris* is derived from the horn-like divisions of the fertile fronds; and its former name, *Ellobocarpus*, refers to the same thing—meaning fruit enclosed in a pod.

ONOCLEA SENSIBILIS. Linn. Sterile fronds somewhat drooping, triangular, pinnately pinnatifid, glabrous, of a pale green colour, two feet long by eighteen inches in width. Pinnæ oblong-lanceolate, sinuate or dentate, the upper ones decurrent. Fertile fronds erect, contracted, bi-pinnate, the pinnules having their margins incurved so as to assume the appearance of sessile rugose berries, usually twelve to eighteen on each of the pinnæ. Veins in the sterile fronds reticulated; in the fertile simple and free. Sori doubly protected, first by a very thin membranous covering, and then by the revolute margins of the pinnules; about eight or nine sori in each pinnule. Stipes glabrous. Rhizome creeping, and spreading rapidly under ground.

It is strange that a plant so elegant and distinct as this "Sensitive Fern" should be so seldom seen in our gardens, particularly as it has been so long introduced (1799), and may now be bought at so cheap a rate. It is a native of Virginia and other parts of the United States of America. Nothing can be more simple than its culture; it only requires a deep, moist, peaty soil, and a shady situation. Under these circumstances it soon establishes itself, and grows rapidly; it is quite hardy, and

may easily be propagated by division. It is a deciduous, or more properly herbaceous, Fern, the fronds dying down in the autumn. Its sterile fronds are produced early in the season, but the fertile ones do not appear till July.

The name *Onoclea* is derived from *onos* a kind of vessel, and *kleis* to close or shut. The same name was applied by Pliny and other old writers to a very different plant, a species of *Boraginaceæ*. Linnaeus gave it the specific name, thinking that the fronds were very sensitive and liable to injury—a supposition not proved by facts now we are acquainted with the plant in its living state. It may be transplanted or divided in the winter without the least fear of injury.

ASPLENIUM FORMOSUM. Willd. Fronds nine inches to a foot in length, membranaceous, pinnate, leafy to the base. Pinnæ sessile, the lower ones triangular, those towards the apex of the frond lanceolate, somewhat auricled on the upper side; deeply incised, particularly along the anterior margin. Sori short, linear, covered by an oval membranous indusium. Veins forking, free. Stipes ebenous—i.e., black and shining. Rhizome erect; vernation fasciculate.

This beautiful little stove Fern is looked upon with justice as the gem of every collection in which it is found. It is a native of tropical America (Brazil, New Grenada, Panama, Mexico, &c.), and several of the West Indian islands: the same plant has, it is said, been found in India and Ceylon. If this be really the case, it is another proof of the great geographical range Ferns have, compared with flowering plants. It is not difficult to cultivate, but it should not be over-potted, and by no means exposed to draughts of cold or dry air. It was a year or two since one of the scarcest of Ferns; but several nurserymen having lately succeeded in raising a good stock of it from spores, it may now be bought at a moderate price. It forms a very elegant centre plant for a Wardian Case; and as it will not overgrow its position, it very suitable for this purpose.—KARL.

CULTURE OF SOLANUM CAPSICASTRUM.

THE following detail of my success in cultivating this beautiful biennial plant may be useful to many of your correspondents.

In January last I sowed the seeds in pans, placed them in bottom heat, and kept them there till the plants were large enough to be removed into thumb-pots. After this they were placed in a warm pit, kept near the glass to keep them from drawing up till they had filled their pots with roots. I then shifted them to four-inch pots, plunged them into sawdust up to the rims of the pots: they soon made very vigorous growth. I applied water by the syringe daily, as I find this plant very subject to the attacks of the red spider.

At the beginning of April I was obliged to repot the plants again into six-inch pots, plunging as above, and still keeping the syringe at work till the plants showed well for blooming, which was in June. While in bloom I kept them free from syringing, and at a much higher temperature till they had set their fruit. I then repotted them in eight-inch pots, in good, rich turfy loam, with plenty of leaf mould and sand, and kept them watered with weak liquid manure, and well watering them with the syringe morning and evening till the berries began to colour. I then removed them to a warm greenhouse, stopping all the points except the leading shoot. The plants are now nearly eighteen inches high and fourteen inches across, with from forty to fifty berries on them, and by the end of next month I hope to see all the berries quite ripe. They will then have a beautiful appearance. I know no plant, with the exception of the *Ardisias* for decorating purposes that has so seasonable an appearance at Christmas time as the *Solanum capsicastrum*.—THOS. RAWBONE, *Gardener, Barlaston Hall.*

CYPRIPEDIUM CALCEOLUS—BLACK TRIPOLI GRAPE—RABY CASTLE CURRANT.

MR. APPLEBY, in his article on "Hardy Orchids," recommends the beautiful *Cypripedium calceolus* to be grown in "sandy fibry peat." I think that Mr. Appleby has never seen this beautiful plant in its native "Deans" of Durham, or he would have told another tale; and, if my memory is correct, he fell into the same error when writing on the subject some years back. I am aware that *C. calceolus* will live in peat; but, to grow it to perfection, it requires very strong limestone clay—as it is invariably found

growing in decomposed limestone rocks. And if he will favour me with a visit next year I will show him it in its native habitat.

The Fruit Committee of the Horticultural Society state that the Black Tripoli and Frankenthal Grape are the same. There must be some great mistake somewhere. The true Black Tripoli of Welbeck is one of the best of Hamburgs—always a good colour, thin-skinned, and very sweet; bunches a good form, and medium sized. On the other hand, Frankenthal seldom attains a good black, is thicker skinned, less juicy, and less sweet; and is, in fact, a very inferior Grape—not worth cultivation.

The Raby Castle Currant has been also called "May's Victoria;" but for what reason I know not, except for sale. It is frequently confounded with the Haughton Castle—a much more recent production with shorter bunches. The original trees, I am told, are still at Raby, and still bear remarkably fine fruit if properly managed. They require annual pruning to one or two eyes, or they will not break the lower eyes. No Currant will keep so long as the Raby Castle. It is no uncommon thing to have them in December from a north wall. It is a very acid Currant, and the best for jelly.—THOMAS SHORTT, *Raby Castle*.

WHAT TO LOOK FOR ON THE SEASHORE.

(Continued from page 37.)

ECHINODERMATA (Continued).

HOLOTHURIDÆ.

THE Holothuridæ, or Sea Cucumbers, approximate on the one hand to the Annelides, or Worms, and on the other they resemble soft Sea Urchins. The vulgar name, "Sea Cucumbers," is very expressive of their form, but they are by no means elegant creatures—to be plain, they are rather repulsive than otherwise in their appearance; still, when the gay fringe of their tentacles is fully displayed, it is impossible not to regard them with some degree of pleasure and admiration.

We are very destitute of information regarding the habits of these creatures. The rarity with which they are met with, and the great difficulty of examining them when found with any degree of satisfaction, may be among the causes which have deterred our marine zoologists from devoting more time and attention to them. It is certain, however, that they possess many strange peculiarities which would amply repay a more careful study of their habits. They usually live among sea-weeds or in mud, and are supposed to seize their prey by the aid of their large tentacles. The skin is, in most cases, soft and leathery; in some species, however, it is protected by horny or calcareous spines. The body is divided into longitudinal segments by five avenues of suckers, which suckers are similar to those of the true Star Fishes and Sea Hedgehogs. They have a double mode of progression, one by means of these suckers, and another by the extension and contraction of their bodies like worms. They have two apertures placed, one at each extremity of the body. One of them, the mouth, is surrounded by plumose tentacles, which when complete always represent some multiple of five; but as these animals are strangely subject to the loss or absence of their parts, either by design or accident, it often happens that the number is irregular, which has given rise to the formation of different species, a more careful examination of which would have referred them to one and the same. These animals possess the power of withdrawing their tentacles within the mouth, and when deprived of freedom they will often keep them so withdrawn for days together, although lively and active enough in all other respects. The tentacles when thus retracted remain within the dental circle, the teeth being similar to those of the Echini. Through them passes the œsophagus, which opens into the stomach; whence a complicated intestine proceeds to the posterior extremity of the body, and there discharges its contents into a funnel-shaped receptacle, into which open also the respiratory organs. There is a vascular and nervous circle surrounding the mouth, and vessels diverge from them to the various parts of the body. The inner surface of the skin is lined with longitudinal and transverse muscles, serving the purposes of contracting and lengthening the body. The Sea

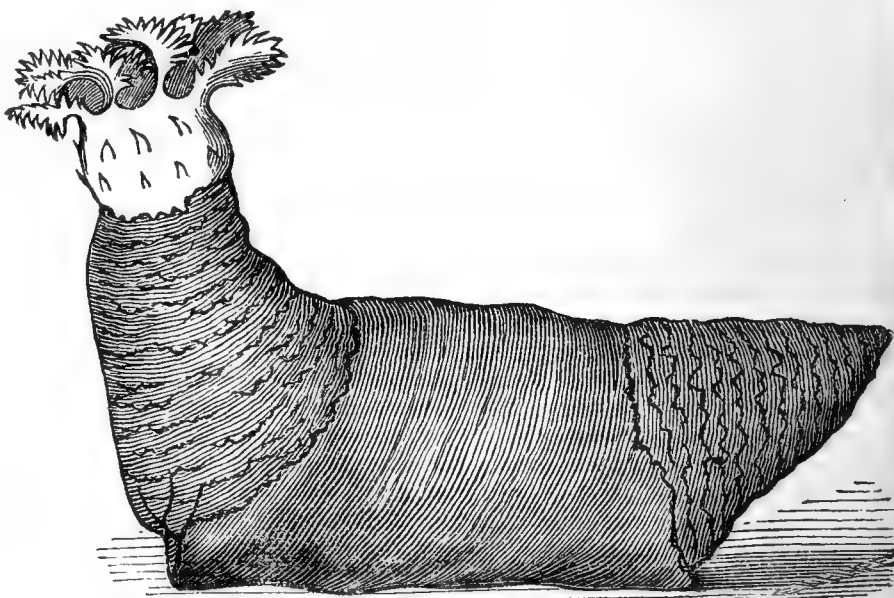
Cucumbers also have the marvellous faculty of ejecting the whole of their viscera, and even sometimes burst their bodies by their violent convulsive contractions. The ejecting the viscera, or the rejection of other parts of their organism, seems to give them very little concern, and to subject them to the least possible inconvenience. Sir John G. Dalyell states that he had observed them "lose their tentacula, with the cylinder (dental apparatus) mouth, œsophagus, lower intestinal parts, and the ovarium, separating from within, and leaving the body an empty sac behind, yet it does not perish; in three or four months all the lost parts are regenerated, and a new funnel composed of new branches as long as the long body of the animal, begins to exhibit the same peculiarities as the old one, though longer time be required to attain perfection. Other species of the Holothuria divide spontaneously through the middle into two or more parts, all becoming ultimately perfect by the development of new organs, yet the anatomical structure of the whole genus is so complex as to defy the skill of anatomists in discovering the functions of some of the parts. A single Holothuria has produced five thousand ova in the course of a night. The young resemble a white maggot, when the size of a barley-corn. The animal may lose and regenerate its organs more than once, and is very rarely to be procured entire."

The Holothuridæ are distributed throughout all seas, but congregate in the largest numbers in the east. On our shores they are comparatively rare; but they are very abundant abroad, and in some places are used as articles of food. Of the Trepang, as before stated, many species are eaten. The orthodox mode of dressing them is by extracting the intestines, then boiling them in sea-water, and afterwards smoke-drying them.

Professor Forbes divides the British Holothuridæ into four families. The *Psolidæ*, *Pentactæ*, the *Thyones*, and *Synaptæ*.

PSOLIDÆ.

THE SNAIL SEA CUCUMBER (*Psolus phantapus*).—This creature is of an oblong form, turned up at both extremities. It is of a



brown colour, the head reddish-white with orange spots. The body, which measures from six to eight inches in length, and from two to three in height, is covered with pectinated scales. On the under surface is a soft disc of an oblong-square shape, on which are placed three longitudinal rows of suckers. These suckers are extremely strong and powerful, and by their aid the animal adheres so firmly to rocks and other substances as to render it almost impossible to detach it. Indeed, so tenacious is its hold, that Professor Forbes states the head of the creature has been torn away by the dredge, leaving the remainder of the body still attached, when it brought up entire every other fixed animal which it came in contact with. The body is covered with a strong tough skin, of a deep brown on the upper surface; beneath it is lighter, and sometimes marked with orange spots. The spines on the skin, which are arranged like the teeth of a comb, somewhat resemble those of the true Star Fishes. The head is about an inch in length, and is covered with a soft skin, more or less red in colour, with orange or scarlet spots. At its

extremity are five large pedunculated tentacles of a bright orange colour, with dark spots. The muscles of the Psolus are remarkably powerful. It has been taken off Scarborough, and has been occasionally found both in Devon and Zetland, so that its

range is pretty extensive. It is also to be met with on the coast of Berwick, in deep water off the coast of Fife, and at Bangor, in the county of Down, Ireland.—W.

(To be continued.)

FRUITS OF 1860 AT BURNTWOOD GRANGE.

(Continued from page 10.)

MUSA CAVENDISHII.

THIS most splendid and valuable plant is a native of China and was first brought to this country from the Mauritius in 1829. The history of it is to be found in No. 27 of "Paxton's Botanical Magazine." It is there said to differ widely from any of the known species of this genus, and more particularly from the dwarf kinds. The fruit is said to be its most valuable quality. It is also there confidently expressed at that date that this, as well as many of the other various kinds of Musa, would ere long, for the sake of their fruit, be cultivated for the tables of the great.

Close by the side of a walk that poets would delight in giving a description of (the sides of the greater part of which are composed of tastefully arranged rock-work, with many of the various kinds of British Ferns inserted at every available space, in quite a different part of the grounds to where the vinery is situated, and on the selfsame spot where many a little warbler has delighted the listeners by his soft, plaintive, and melodious strains at all hours of the day), stands a small octagon-shaped tropical house—octagon-shaped, because the same walls with a little alteration were made to do for this; as the former one, which, as might be gleaned from above, was an aviary.

In this house, in a small box two feet five inches in length by one foot eleven inches in breadth and one foot two inches in depth, is now growing a fine specimen of this highly interesting and most ornamental species. All the neighbouring gardeners that have seen it, as well as many from a distance, call it a gigantic plant. According to the size of the box that it is growing in the depth of mould cannot be a foot, beside drainage; for with the latter included it is only 13 inches deep. It has at present seventeen leaves on it (and has lost a far greater number than that), varying from 6 feet to 7 feet in length by from 2 feet to 2 feet 6 inches in breadth. It is about 4 feet from the base to the top of the stem—that is, to the base of the fruit-raceme; circumference at the base 2 feet 2 inches; at the top of the stem 1 foot 10 inches; length of fruit-raceme (October 12) 3 feet; with something like two hundred matured fruits growing on it all in tiers, with from sixteen to twenty-two fruits in each tier. To-day (October 18th), I have cut the top, or spadix, off within 2 inches of the last tier of perfectly-set fruit.

In the month of March, 1859, this plant was in a 48-sized

pot, when it was grown in, and shifted from pot to pot in rapid succession, until it was finally shifted into the box that it is now in, which was about eight months ago. It has been

liberally fed with liquid manure all through the different stages of its growth, which seems to suit it to a very high degree—in fact, there are but few plants, if any, under cultivation that make such rapid progress through high feeding as this does, and when in its growing state the quantity required is almost incredible. Day after day, up to within this last month, this plant has received from one to two gallons of powerful liquid manure per day for the greater part of the summer months, which have told with wonderful effect, especially on its foliage, which is of the most majestic description imaginable.

Choice fruit certainly is very valuable, especially a fruit of these not-generally-cultivated exotic species. That its fruit will prove a great acquisition there seems not the least doubt. If its fruit was the only thing obtained, it would amply repay the cultivators of it for their trouble. But it is not: look for a moment at its noble leaves, which form one of the grandest objects in vegetable life. Then, next, its culture, which is of the easiest description imaginable. The principal points to be most particularly attended to in this being moisture, both at its roots and in the house where it is growing; the latter should have a strong

moist heat, ranging from 70° to 80° of Fahr. Not under any circumstances while it is in its full growing state ought it to receive a check, for if it does there is a kind of stuntedness given which it is utterly impossible to recover.

The soil of an old Melon or Cucumber-bed, with a little sand and dung, suits it admirably. It is possible to grow it in peat, but not into such specimens as from the above-mentioned soil. The latter would do where the fruit was not the point aimed at; but where fine fruit and foliage both are required, it cannot be either fed too high or grown in too rich a soil. I have now three young suckers, one taken off in March last, the other two in the latter part of August. The first-mentioned one required shifting very nearly monthly for the last three months. The growth of it is most rapid. When young it is highly interesting to watch its progress; but when full grown it has that attractiveness about it which commands admiration from all who gaze



on it. So, look at it which way I will, I can come to no other conclusion than that it is a plant that ought to be found in a great number more stoves than it is; and that it is one that is worth cultivating for its foliage as well as its fruit.—A. J. ASHMAN.
(To be continued.)

ALONSOA WARCZEWICZII IN THE MANCHESTER BOTANIC GARDEN.

"It is an ill wind that blows no one profit" is an old but still valuable proverb; and its application to certain things—the present cold wet season—may justly give rise to the question, What has the present summer been favourable to? An ill-natured answerer would say, "Weeds, dirty roads, and umbrella-makers." But it nevertheless has merits of its own even in a gardening way, and in the flower garden too, notwithstanding all the complaints we hear to the contrary—and many of them, it must be admitted, are well grounded. Still, some things have not done amiss amongst the rain and other discomforts; and it would be worth while for the observant cultivator to take notes of the best ornaments of our gardens in a season when there has been so many failures amongst our most popular favourites. Verbenas have invariably done badly, and the same may be said of Petunias. Geraniums have run all away to leaf after remaining stationary so many weeks after planting; so that, with the long dewy evenings which occur in autumn, we have not had much bloom this summer. Calceolarias, however, have been better, though not good; but they have been amongst the most useful of flower-garden plants. But, as I may at a later period describe more fully the merits or failings of the various bedding plants I have seen the present season, it will suffice to say that the most useful I have found at home have been the variegated plants, including the various Geraniums that are that way (Golden Chain excepted), *Arabis variegata*, *Cerastium tomentosum*, *Alyssum variegatum*, and *Cineraria maritima*. These have been especially useful as contrasting so well with the green turf or other foliage by which they were surrounded. Another plant, remarkable for its foliage but in another colour, has also done well—the *Perilla nankinensis*, which has been a universal favourite at all places where I have seen it growing, and I think it will be more extensively cultivated another year. But I will not say any more until a future opportunity; but will call attention to the merits of a plant I had previously thought was hardly deserving more than an unimportant place in the mixed border—the *Alonsoa Warczewiczii*, a plant differing but slightly from what was called *Hemimeris coccinea* thirty years ago, and *Celsia urticifolia* before that.

This *Alonsoa*, with its unpronounceable specific name, was offered to the flower-gardening world about six years ago, more or less: but it never attained much distinction that I am aware of, and on dry seasons with me it degenerated into a miserable-looking object, with leaves scarcely larger than those of a Heath. Judge my surprise, therefore, when on a ramble lately amongst some distant gardens, to find a bed of this the most telling thing I have seen the present season. And its beauty was not of that transient character, like that of many annuals which present a great mass for a short time and are then totally done for. This *Alonsoa* had been amongst the earliest bloomers of the season, the rain seemingly having no other effect on its flowers than washing them brighter. And there seemed every prospect of its lasting until frost destroyed it; for a plant that will endure the perishing rains we have been visited with the past summer will bear it to the end. And this *Alonsoa* had received its full share; for the place where it was growing to such perfection was one noted at all times for its pluvial character—Manchester: for in the botanic garden attached to that important city a bed of this plant was the most showy in the garden, which contained several distinct geometric sets of flower-beds planted in the usual way, as well as some isolated ones at particular places. Most of the plants presented the usual feature complained of in the beginning of these notes. Whereas, this one was all that could be desired, and Mr. Finlay, the intelligent Curator, told me it had been the best during the whole season. He at the same time justly observed, that its well-doing was in a great measure owing to the wetness of the season, so that in ordinary ones we must not expect to have it do so well as it has done in the case alluded to. But in some localities noted for the quantity of rain that falls—as many in the west of England are, this may possibly be found a valuable acquisition; but in places of a contrary description,

it ought to be used with more caution, for a marsh can no more thrive well in the same situation as a rock plant than fish and land fowl can enjoy the same element.

To gardeners visiting this Lancashire metropolis, the Botanic Garden affords many attractions. An excellent collection of exotic plants in the best possible order occupies a long range of houses; while the grounds are laid out with considerable taste, and well kept; but the close proximity to a large smoky city is at variance with the well-being of many things out of doors, that the contents of the house will in a general way be found most interesting, and, as I have before observed, they are remarkably well managed. Many excellent specimens of plants usually accounted rare graced the shelves of the various houses; and there were some good examples of recently introduced plants of various kinds. The whole are arranged for effect, combined with a certain amount of classification; but this latter principle does not form an absolute rule in the garden, for, as Mr. Finlay justly observed, the multitude patronised showy good plants rather than those having little to boast of but an unpronounceable name—consequently, in addition to a good collection of Cape, New Holland, Stove Orchids, Ferns, and other plants, varieties of some of them were also cultivated; and excellent lots of double and single Chinese Primulas, as well as Chrysanthemums, Cinerarias, and other plants were to be seen in a tempting state, and reflected great credit on all concerned; and the courtesy with which Mr. Finlay showed and explained all made me regret my time was too short to take other than a passing notice of what I saw, but I may refer to it again.—J. ROBSON.

VARIETIES.

BREAD.—The earliest and most primitive way of making bread was to soak the grain in water, subject it to pressure, and then dry it by natural or artificial heat. An improvement upon this was to pound or *bray* the grain in a mortar, or between two flat stones, before moistening and heating, and from this *braying* operation some etymologists propose to derive the word *bread* (as if *brayed*). A rather more elaborate bruising or grinding of the grain leads to such simple forms of bread as the *oat-cakes* of Scotland, which are prepared by moistening oatmeal (coarsely bruised oats) with water containing some common salt, kneading with the hands upon a baking-board, rolling the mass into a thin sheet, and ultimately heating before a good fire, or on an iron plate, called a girdle, which is suspended above the fire. In a similar manner, the barley-meal and pease-meal *bannocks* of Scotland are prepared; and in the East Indies (especially the Punjab and Afghanistan), as well as in Scotland, flour is kneaded with water, and rolled into thin sheets, as *scones*. The *passover cakes* of the Israelites were also prepared in this way. A similar preparation of Wheat-flour, but where the sheet of dough is made much thicker, forms the *dampers* of Australia. The Indian corn-meal, kneaded with water and fired, affords the *corn-bread* of America. The kinds of bread referred to above are designated *unleavened*, as no leaven has been added to the dough to excite fermentation. Even in the time of Moses, however, leaven was employed in making bread. It is held probable that the Egyptians were the first to use leaven; that the secret afterwards became known to the Greeks; and that the Greeks communicated the process to the Romans, who spread the invention far and wide in the northern countries during their campaigns. The grain of Wheat is generally employed in the manufacture of bread among the better classes, and more advanced nations, though Rye, Barley, Indian corn, and Rice are also extensively used. The average composition of the grain of Wheat when dried, so as to evaporate about 14 per cent. of moisture, is

| | |
|---------------------------------|-----|
| Gluten and albumen..... | 13½ |
| Starch | 54½ |
| Gum, sugar, oil, and fibre..... | 30 |
| Saline matter | 2 |

The proportion of these ingredients varies, however; and though the native country of Wheat is unknown, yet it is found that, within the Wheat zone, the quality improves as we travel south. Thus, Scotch Wheat is inferior to English, the latter to French, that to the Italian; and the finest Wheat in the world is grown in Barbary and Egypt. The principal constituents of Wheat may be separated from each other without much difficulty. Thus, if Wheat-flour be placed in a cloth-bag with the mouth

well closed, and the whole introduced into a basin of water, and pressed by the fingers for some time, the starch is squeezed through the cloth as a fine white powder, and the gluten is left in the cloth as a viscid or sticky substance. Again, if Wheat-flour be burned on a porcelain plate on a fire, or oven, or gas-lamp, till it can burn no longer, it leaves behind a small amount of ash or saline matter. Previous to being employed in the fabrication of bread, the grain of Wheat undergoes the process of *grinding*, with the double object of reducing it to a fine state of division, and separating the more hard and indigestible parts. During the grinding operations, the Wheat as it passes from grain to flour nearly doubles its bulk. The products come from the dressing-machine divided into different qualities, a quarter of Wheat yielding—

| | Bushels. | Pecks. |
|-----------------------|----------|--------|
| Fine flour..... | 5 | 3 |
| Second flour..... | 0 | 2 |
| Fine middlings | 0 | 1 |
| Coarse middlings..... | 0 | 0½ |
| Bran..... | 3 | 0 |
| Twentypenny | 3 | 0 |
| Pollard..... | 2 | 0 |
| | 14 | 2½ |

In the making of bread in Great Britain, the finest flour is employed in making *firsts* or the *fine 4-lb. loaf*; a coarser flour is made into *seconds* or household bread; and a still coarser into *thirds* or coarse bread. There is no bran in *firsts*, but a greater or less proportion of the finer bran in *seconds* and *thirds*. In the making of good bread three things are absolutely requisite: flour or meal, yeast or leaven, and water containing salt. The yeast, or leaven, is added to give a start to the fermentation process, thereby supplying carbonic acid, which communicates a spongy or light texture to the bread. Leaven is the more primitive ferment, and is simply a portion of moistened flour or dough in which the putrefactive agencies have begun to work. It may be procured by allowing moistened flour to lie in a warm apartment (summer heat) for six or eight days, and when sufficiently formed, has an acid taste and reaction, and a somewhat fusty odour. When brought in contact with a new portion of flour and water, and incorporated therewith by kneading, it very quickly acts as a ferment, and develops partial fermentation in the whole. Hence it is that where leaven is used, it is customary to retain a portion of the leavened dough for the next baking. On the continent, leaven is still very extensively employed, especially in districts far from breweries. In Britain, yeast is generally used as the ferment. The materials being at hand, and the proper benches, utensils, and oven being within reach, the baker takes a quantity of water and adds to it the yeast and salt; after which the flour is added, and the whole thoroughly and laboriously kneaded together till it assumes a ropy consistence. It is then called the *sponge*, and is placed in a kneading-trough in a warm place, which is styled *setting the sponge*. In a short time the yeast begins to act on the gluten, starch, and sugar of the flour, compelling the latter to pass into alcohol and carbonic acid gas in every part of the dough, which thereby becomes inflated with innumerable air cavities. When the fermentation has sufficiently advanced, the baker takes the sponge, adds more flour, water, and salt, and a second time subjects the whole to a thorough process of kneading, to prevent portions being so far fermented as to become *sad*, and again allows the mass to lie in a warm place for a few hours. The dough swells considerably from distension by gas, and is weighed out into lumps of the proper size, which are shaped into loaves, constituting the batch, or placed in tin pans, and are allowed to lie for a short time till they get further distended. The oven has previously been heated by flues, by heated air, or by wood being burned within it, to a temperature of at least 320° F., which is the lowest temperature at which bread can be baked, and ranging up to 572° F.; and when it has been thoroughly cleaned out, the loaves are introduced and placed on the floor, and the oven shut up. The heat acts in dissipating much of the water from the dough, in distending the air-cavities more fully, and in partially boiling the starch and gluten of the dough, and developing some gum from the starch. Indeed, though the temperature of the oven is much higher, yet the loaves beyond the mere crust are bathed in an atmosphere of steam, and are never heated above 212°, as has been proved by direct experiments with the thermometer. One effect of the heat is to arrest any further fermentation. After several hours' baking in the oven, the length of time being deter-

mined by the temperature, the loaves are withdrawn and allowed to cool. The brown appearance of the crust of the loaves, and the pleasant taste of the crusts, are due to the action of the heat on the starch and the formation of dextrine, a sort of gum. The number of quartern (4 lb.) loaves which a sack of flour weighing 280 lbs. yields, is 90. It will be apparent, therefore, that as 280 lbs. of flour yield 360 lbs. of bread, that a good deal more water must be present in the latter than in the former; and, indeed, ordinary good wheaten bread contains about 45 per cent. of water. This water is retained even after the loaf is apparently dry, and even mealy, as the gum and gluten have a great affinity for water. Improvements in the process of making bread are occasionally effected. Thus a form of yeast, called German barm or yeast, has been introduced, which is more cleanly than ordinary yeast or leaven, but appears to be too rapid in its power of causing fermentation to be manipulated easily in the making of ordinary loaves, though it does well for pan-loaves and fancy bread in general. Ovens heated by flues are being constructed, instead of the primitive method of heating them by wood, which smokes the whole oven. Instead of raising the dough by the action of yeast, which decomposes a part of the flour and causes the loss of about 2 per cent., bicarbonate of soda and hydrochloric acid are sometimes employed. The proportion by this process are 4 lbs. of flour intimately mixed with 320 grains of bicarbonate of soda; to this is added a mixture of 300 grains of common salt in 35 ounces of water, and 6½ fluid ounces of hydrochloric acid, and the whole is thoroughly kneaded and placed in the oven. When the mixture is made, the acid acts on the bicarbonate of soda, forming common salt, which is left in the dough, and carbonic acid is liberated at every point, and communicates a spongy texture to the dough. The disadvantage attendant on this mode of raising the dough is, that it is apt to leave too much common salt in the bread. This is obviated by using water charged with carbonic acid. Sesquicarbonate of ammonia is employed to some extent in the preparation of rusks, ginger bread, and other light fancy bread; when heated, it entirely passes into gas, and thus yields a very spongy mass. *Short-bread* is prepared from flour which has been incorporated with butter.—(*Chambers's Encyclopedia.*)

TO CORRESPONDENTS.

GRAPES WITHERING (*An Old Subscriber*).—We do not know whether you mean that the berries are spotted or shanked; probably the latter, in which case the stalks of the Grapes are dead. It probably arises from the roots being too cold if outside the house, or from their being too deep and in an ungenial subsoil if inside the house.

SEEDLING FUCHSIA (*C. Kimberley*).—Good form, large; corolla spreading wide like a parasol. In this respect resembling the new strain exhibited a short time since before the Floral Committee of the Horticultural Society.

LILIPUT DAHLIAS (*A Devonian*).—The Liliput Dahlias were only being propagated when Mr. Beaton was last at the Wellington Road Nursery, and being for beds they are not fit to be so cooked as to be fit to be sent to the tables of the exhibitions. None of our staff, we believe, have seen any of them yet. Like all new sections of such flowers, they are now the best of that strain. The next move will be to improve them: therefore, the more they are distributed the sooner we shall have them our own way. For that reason we never cease recommending all new plants and new sections of old ones, as soon as we see them or hear of them. Some people object to that course, and would rather wait until a new race was at the point of perfection; and if all were of that stamp we should never see any improvement at all, as no class of plants has ever yet been fully improved in one age. As long as we can remember, attempts have been made to improve and vary every class of popular plants. All such attempts have been fostered by the public without waiting for perfection. It was that stimulus which brought us to what we have, and we can offer no improvement on that branch of our craft.

ADVERTISEMENT CHARGE (*Young Subscriber*).—Five lines for half-a-crown.

FLOWERS NEAR ELMS (*A Constant Reader*).—If the roots of the Elms reach to where you wish the beds to be, and you cannot cut through the roots and prevent their returning, no flowers will succeed in the beds, for the roots of the Elms will suck up all the nourishment out of the soil and starve the bedders. The cocoa-nut refuse is only on sale at the mills near Kingston, Surrey, and there are no means of getting it from there without calling for it.

WEIGHT OF A BUSHEL OF ROOTS (*Novice*).—The weight of a bushel of medium-sized washed Potatoes is always calculated as 56 lbs., so that there are forty bushels to the ton. If unwashed, 60 lbs. are allowed to the bushel, so that then nearly forty-three bushels would be allowed to a ton. Mangold Wurtzel, Turnips, Carrots, and Onions, must be nearly the same weight as Potatoes. The age to which seeds will preserve their vitality varies much with the care bestowed upon their preservation. If you will refer to our No. 538, you will there find a long article on the subject. New seeds always produce the most vigorous plants.

GATHERING AND RIPENING PEARS (*Pears*).—They are fit to gather when by raising them gently to a little above a horizontal position, the stalk separates freely from the spur. We have appended the usual month of ripening to the varieties named. Althorp Crasane (November). Beurré

Rance (March). Knight's Monarch (January). Dunmore (October). Louise Bonne (October). Glou Moreau (January). Hacon's Incomparable (December). Passe Colmar (December). Beurré d'Aremberg (January). Gratioli (September). Winter Nelis (December). Jean de Witte (February).

NAMES OF PLANTS (An Amateur, Tyrone).—Your plant is not at all like *Saxifraga purpurea*, but appears to be some *Sedum* allied to *S. anacampseros*. We never heard of such a plant as "*Chelidonium japonicum*." There is a *Chelidonium japonicum*, but we have no experience concerning it. *Ferraria*, or more properly *Tigridia pavonia* has orange-scarlet flowers spotted with red. Those of *Conchiflora* have the ground colour yellow. (*O. P. O.*)—We do not recognise the plant which bore the seeds you enclosed. (*A. Robertson*).—The yellow-flowered plant is *Chrysocoma linoisyris*. The others are *Veronica virginica* and *Astrantia minor*.

POULTRY AND BEE-KEEPER'S CHRONICLE.

POULTRY SHOWS.

NOVEMBER 7th. DEVIZES AND NORTH WILTS. *Hon. Sec.*, Geo. Saunders Sainsbury, Rowde, Devizes. Entries close October 13th.

NOVEMBER 21st, 22nd, 23rd, and 24th. WEST OF SCOTLAND ORNITHOLOGICAL ASSOCIATION, GLASGOW. (Pigeons and Canary Birds.) *Sec.*, Thos. Buchanan, 74, Argyle Street, Glasgow.

DECEMBER 3rd, 4th, 5th, and 6th. BIRMINGHAM. *Sec.*, Mr. John B. Lythall, Offices, Unity Buildings, Temple Street, Birmingham. Entries close November 1.

DECEMBER 6th. HULL AND EAST RIDING. *Sec.*, G. Robson, 25, Waterwork Street. Entries close November 22nd.

DECEMBER 12th, 13th, and 14th. NORTHERN COUNTIES (DARLINGTON). *Sec.*, J. Hodgson, Darlington. Entries close Nov. 19th.

DECEMBER 12th, 13th, 14th, and 15th. CRYSTAL PALACE. (Poultry, Pigeons, Rabbits, Ornamental Water Fowl, and Pheasants). *Sec.*, Mr. W. Houghton. Entries close November 10.

DECEMBER 18th and 19th. LORD TREDEGAR'S, at Newport, Monmouthshire. *Sec.*, Mr. C. H. Oliver, Commercial Street, Newport. Entries close Nov. 21st.

DECEMBER 21st and 22nd. HALIFAX PIGEON SHOW. *Sec.*, D. R. Edgar. Entries close December 8th.

DECEMBER 28th and 29th. KENDAL. *Hon. Secs.*, G. C. Whitwell and T. Wilson.

JANUARY 30th and 31st, 1861. ULVERSTONE. *Hon. Sec.*, Mr. T. Robinson, The Gill, Ulverstone.

N.B.—Secretaries will oblige us by sending early copies of their lists.

SILVER-SPANGLED HAMBURGHES.

WE are happy to do that which two of our subscribers ask, and to record our opinions and ideas on birds of the above breed. There has always been a feud between Yorkshire and other parts of England in this matter. The former had adhered to black breasts, the latter has them spangled. We must, however, take objection to the term "laced Hamburgs." There were such formerly, and many can recollect the birds exhibited by Mr. Fisher, of Blandford. They had a long run of success, which was made easy by their remarkable beauty and the brilliancy of their colours, but it became patent to close observers there was in them a cross of the Silver-laced Bantams. Neck and tails were perfect, but they were indeed laced, every feather being correctly edged with black. They also diminished rapidly in size, and a stand was made for better birds, or, at least, some that would be free from the proof of impurity. It was then the difference of opinion arose between Yorkshire and the rest of England; and there was also another heresy, that of the hen-tails. Among the partisans of the latter was one of the most talented men ever enlisted in the poultry cause; we allude to Dr. Horner, of Hull. About this time we for comparison and knowledge' sake, claimed the first prize pen at a Show of Hamburgs somewhere near Huddersfield. It was said the decisions would be those of practised and admitted Hamburg Judges. No doubt they were so, and our first prize cock was a black-breasted, over-combed, semi-hen-tailed, ill-looking creature. These heresies died away, and we thought, save some few enthusiasts in remote nooks and corners, amateurs were agreed on the points to be insisted upon. When clear tails, white foundation colour, and accurate spot at the tip were insisted upon, we first began to lose the lacing; previous to that all the best specimens had the barring and lacing on the wings. While we are quite prepared to acknowledge *any lacing* on the body to be a grave fault, we must think it desirable on the wings; and all who keep them will be ready to admit that, with the requirements of the present day in the way of colour and markings on the body, these on the wings are difficult of attainment. If these barrings and lacings were obtained by the sacrifice of other points, it might be necessary to weigh the cost lest we might purchase them too dearly. Take this occasion at Worcester, and it was there seen the pen in question, equal in *every other point* to the other competitors,

was superior in this. Our own experience is, that wherever we meet with the point now objected to, we find better colour and better spangling, and we know we have a better bird to breed from. * We have always held it to be an important feature of excellence, and quite as desirable in Spangled Hamburgs as in Spangled Polands. We are not aware that it is any novelty, or that opinions or decisions have varied. Prize pens have been common which lacked this, in our eyes, important merit, but such only had the prize because they were the best, and not because they were *perfect*.

We have often had occasion of late to remind exhibitors and our readers of this fact, that prizes are given to the best in a class; but it does not necessarily follow they were as good as could be. So that if a pen were shown to a friend as having gained the first prize at the forthcoming monster Meeting at Birmingham, it would not, *of necessity*, present a perfect specimen of the breed. If an amateur were to task himself to produce the counterparts of those that were shown to him as the highly successful birds, he would in all probability only secure disappointment. It cannot have escaped notice, that Silver-spangled Hamburgs have not kept pace with many other breeds in the march of improvement of late. A constant cause of complaint is, deficiency of colour and spangling; the hackles have become almost white, the spangling faint and irregular, the wing little marked in any way.

The only compensation has been that the tails have become clearer and better. It seems to be certain that perfection shall be almost impossible, and that the plumage of a bird shall have a sort of compensating rule—that if you take colour out of one part of the body you shall lose it all over, instead of being able to take it from one and place it on the other. Take Pencilled Hamburgs for instance. Pencilled tails were asked for and obtained, but it cost the clear hackles; and clear tails in the Spangled have cost bold spangling, and laced and barred wings. Such being our opinions, we do not hesitate to record them and to say we admire the barred and laced wing. We shall gladly hail its re-appearance, and look to it as the harbinger of the renewal of a class which has of late fallen below its Golden and its Pencilled fellows. It must be recollected, we publish only our own opinion, and we gladly offer our columns to those of others.

There is some truth in the fact of certain Judges having crotchets. Like Bumble, they are but men. We have heard some of them say, one objection they had to acting alone was lest they should give way to any peculiar opinion. For this reason we have always advocated plurality of them; and we have heard one of our largest breeders and most successful exhibitors declare he had a pen for every Judge, and some "flat-catchers" for novices.

We will conclude with one more remark. We have long thought, and we believe, the points of the different breeds are well known and understood. The continual success of certain well-known pens is a proof of it. They were judged at different places by different Judges always with the same result. While these latter have to guard carefully and jealously lest they decide according to any opinion peculiar to themselves, exhibitors must not be disappointed if points much approved in localities are not equally appreciated everywhere else.

THE BIRMINGHAM CATTLE AND POULTRY SHOW.—The entries for the approaching Show will close on Thursday next, the 1st of November. All who require certificates should immediately communicate with Mr. Lythall, the Secretary. The same day is also the last on which entries can be made for the exhibition of Dogs, as considerable time will be required to make the necessary arrangements and to prepare the fittings in the Repository.

SILVER-LACED SPANGLED HAMBURGHES.

THIS variety appears to have been exhibited at the late Worcester Show, and obtained the first prize. Now, in Yorkshire, where most of the best birds of this class are bred, those with laced wings are considered as imperfect, and would be disqualified by Yorkshire Judges. They are not uncommon; but as perfection in all points is the aim of breeders, it would be considered ridiculous to breed from a specimen with any tendency to lacing; the natural consequence is we have more with the spangled wings.

I see no reason why we cannot have a standard of perfection laid down and approved by all, or a majority of well-known Judges in different parts of the country. It is really no use trying to breed perfect birds, for when that is attained we are on the highest acknowledged authority informed they are not what they ought to be, and something fresh is required—nay, something which is considered a fault and in direct opposition to the almost-universally-acknowledged points of excellence.

If we have not some fixed rule it will be necessary to know who is to be the Judge, so that we may show birds to suit the taste of each. It may appear strange, but there is no doubt some exhibitors do know many of the likes and dislikes of some Judges; and I have often heard very amusing remarks when looking out birds for a Show, such as, "Oh, it's no use sending that bird, for Mr. — is sure to be Judge, and he likes them so and so."

If Spangled Hamburgs with laced wings are to be the fashion (and there is no doubt those that take prizes will be so), we shall soon have plenty at the various Shows; but to be first at one, and disqualified at the next will make a fool of the fancy—in fact, it is impossible that such opposite requirements can be carried out, except by showing a pen of each kind. Now, both cannot be right—one or the other must be wrong, and I should be very glad if this matter can be settled through the medium of your valuable and interesting paper.

I hope other fanciers will give us their opinion on the subject, as it must be very interesting to all breeders of Golden and Silver-spangled Hamburgs.—JOHN THORNTON.

FROME POULTRY EXHIBITION.

THE first Poultry Show which was ever held at Frome came off in connection with the Frome Agricultural Society on Wednesday, October 24th.

It was held under a commodious shed in a field kindly lent for the occasion by John Sinkins, Esq., and considering it was a first attempt, passed off very satisfactorily. Owing to the limited, and in some instances exclusive, arrangement of the prize list, the number of pens entered was somewhat small; but amongst them were many very excellent specimens.

The first class which appeared on the prize list was the *Game*, and, for the locality, they made a very fair show; but the exhibitors did not pay sufficient attention to the legs of their birds matching. Mr. Elling, of Sutton, obtained the first prize with a pen of old Black-breasted Reds, which, considering the season, were shown in very good condition. Mr. Dupe obtained second with another pen of Black Reds. He also had a pen of Duck-wings commended, but which were in such condition as to forfeit all chance of their winning. The hens in Mr. Smith's pen were also meritorious, but the manner in which his cock bird was trimmed lost him all chance of success.

The next class was the *Dorkings*, and the prize chickens will, we think, be heard of at larger Shows. In fact they were so fine that we almost think there must have been some mistake made in their age, as they were entered as hatched on the 6th of May. They were remarkably fine, and the cock had the plumage of a two-year-old bird. They were evidently chickens of 1860, but if hatched so late as May, they do great credit to their keep, as they are quite as forward as most of the January chickens. Mr. Hanks was a good second.

The next class we came to decidedly contained the best birds in the Show, and this was the *Spanish*. Mr. Rodbard was, of course, first and second, with two splendid pens of chickens. Mr. Elliott's highly commended pen were also meritorious, but they require age.

In the class for Silver-pencilled *Hamburgs* but one pen competed, and to them the prize was awarded. In this class were entered some Silver-spangled; but as there was no prize offered for them they were no eligible.

The *Ducks* were by far the most numerous class, and contained many excellent birds. Mr. Hanks showed some very fine Aylesbury, but they had to succumb to Mr. Ponting's Rouens, which were good in plumage and considerably exceeded Mr. Hanks' Aylesburys in size and weight. The drake in this pen was one of the largest we ever saw.

The *Geese* and *Turkeys* formed two good classes.

Before concluding our report, we must mention that the Frome Agricultural Society are much indebted to the lady of their noble President, the Earl of Cork, for being the means of such an extensive attraction being added to their Show, for by her was

given all the first prizes. That it was a very valuable addition to the Show there could be no possible doubt; for no person could see the number of ladies that were crowding round the pens, and not see that the poultry, not the cattle, was the portion of the Show which brought them to the field. We have no doubt that with a little better arrangement of the prize list another year, there will be a much larger Show; but this year a great many would-be exhibitors were prevented entering on account of there being no class for their birds to compete in. The Committee are evidently anxious to make such alterations as will render it a thorough good Show, and with such an energetic and obliging Honorary Secretary as Mr. Harding, there cannot be the least doubt but that they will do so. Many of the aristocracy of the neighbourhood visited the field during the day, including the Marquis of Bath, Lord Edward Thynne, Lord H. Thynne, Sir William Joliffe, &c., and there was a goodly number of less aristocratic visitors, the day being a most propitious one.

GAME.—First, R. Elling, Little Sutton. Second, S. Dupe, Evercreech. **DORKINGS.**—First, W. F. Knatchbull, M.P., Babington. Second, F. Crang, Timsbury, near Bath.

SPANISH.—First and Second, J. R. Rodbard, Wrington, Bristol. **HAMBURGS (Silver-pencilled).**—First, D. Phipps, Devizes. (Second not awarded.)

DUCKS.—First, E. Ponting, Whatley. Second, G. Hanks, Malmesbury.

GEESE.—First, I. Cox, Whatley. Second, A. Card, Norton Ferris.

TURKEYS.—First, E. P. Sly, Thoulstone Farm. Second, J. White, Zeals Farm.

POULTRY COMMENDED.—*Game.*—Messrs. Smith, Westbury; Mr. Porteous, Marston; S. Dupe, Evercreech. *Dorking.*—G. Hanks, Malmesbury. *Spanish.*—W. R. Elliot, Plymouth. *Ducks.*—F. Smith, jun., Westbury; F. Crang, Timsbury, Bath; R. Elling, Little Sutton. *Geese.*—J. Ashby, Eggford; S. Rossiter, Monksham Farm; S. Giblett, Bollow. *Turkeys.*—F. Crang, Timsbury (extra class). *Hamburgs (Silver-pencilled).*—B. Grant, Frome.

Mr. George Saunders Sainsbury, of Rowde, near Devizes, acted as Judge.

PIGEONS IN A CONFINED SPACE.

WILL fancy Pigeons breed and keep in health in confinement—that is, in a pen out of doors, about six feet broad and long, and the same in height? How many could I keep in an enclosure of those dimensions, and what sort would be most suitable? What should I require in the way of fittings up—boxes, perches, &c.?—FANCIER.

[You will find the place you mention large enough for about two pairs of the larger fancy breeds, or three or four of the smaller sorts; but it would accommodate more if they were allowed to fly out. Each pair should have two nests, and each pair of nests should be placed as far apart as possible, to prevent quarrelling.—B. P. B.]

LORD TREDEGAR'S POULTRY SHOW.—It will be seen in our list of Poultry Shows when this Exhibition takes place. We wish it could have been more distant from that at the Crystal Palace. The prizes are liberal, ranging from 10s. to £2, and the total to be distributed amounts to £60. There are, also, distinct classes for cottagers.

THE CANARY AND THE BRITISH FINCHES. (Continued from page 13.)

10TH VARIETY.—SCOTCH FANCY.

HAVING noticed that the schedules of the Glasgow and Edinburgh Exhibitions of Canaries, awarded prizes almost exclusively to Scotch Fancy Canaries, I became curious to know if these birds had anything peculiar about them. On inquiry I found, that the Scotch, true to their national character, had raised a variety of Canary peculiarly their own. For the accompanying description I am indebted to the kindness of Mr. J. Ruthven, of Glasgow. He says:—"In reference to Canaries, I enclose a drawing of our Scotch Fancy. This will give you some idea of the Scotch Fancy, but *action* and *nerve* are the peculiar features. The handsomest-shaped birds, and the most lively that ever was in a cage. That is our opinion.

"Their shape is *circled*, and they should stand well up. The cages are furnished with two spars, eight or nine inches apart. The leap, the wheel or turn round, and the drawing themselves up with a quick lively motion and great nerve, are amongst their peculiarities.

"They have no rise on the shoulder, and they should have a

clean, smooth bosom, the tail well turned below the spar or perch.

"Clean buff and clear yellow are the colours of the highest-class birds. The Piebald are merely the same birds bred with variegated colours, or rather being crossed with the Green Canary. The produce are generally green mixed with black and yellow, and it is generally sought to have them evenly marked, so as to have the wings green, and the body yellow, and so forth. The best marked bird in the estimation of the Judge tops the list; but this fancy has *no standard*, as it is in its infancy as yet; but lately it has arisen, I believe, from the difficulty there is found to produce *clear* birds, and this (1859), is the first Show that a bird was allowed to compete which had a black mark on the bill or legs."

In a later letter Mr. Ruthven remarks:—"Our Scotch Fancy Canaries, I may say, average about five inches and a half in length, nervous, light made, and active. We have some good birds six inches and a half, and our endeavour is to get them as long as we can, and as much circled. Our birds with their active motion whip the tail round with a jerk which is liked. A good specimen is not easily got."

He further writes:—"Our Scotch fanciers prefer the Hooped Belgian, not because it is the proper shape, but because they think it will improve their Scotch breed by introducing them as a cross to get length and narrowness."

"They give length and lightness, but it is difficult to get quit of the *peak* and frill in the bosom, which is a bad fault in our bird. Then, again, they generally incline to give stiffness to the tail, which is another drawback."

In conclusion I may remark, that on the whole the introduction of the Belgian cross seem likely to spoil the originality of the Scotch Fancy breed, and fanciers will do well to pause ere they destroy the unique and peculiar Scotch Fancy Canary, which seems so different to anything we have south of the Tweed.

11TH VARIETY.—THE CALAIS FANCY.

I have noticed among the Canary fanciers of Calais, a breed of Canaries that seemed peculiar to that town. They were exceedingly delicate, and the fanciers bred them very early in the season—viz., in January and February. They were jonque in colour, very slight and straight in build, and of tolerable length. So slim and slight were they, that it was a saying among the fanciers, that the best birds looked as if they had been drawn through a lady's wedding ring, and such were highly prized.—B. P. BRENT.
(To be continued.)

THE HERON.

IN "olden times" the heron afforded excellent sport for the falconer, and was considered a suitable dish for Royalty; but in these times he is held a nuisance, for he may be seen transfixed at the end of a barn along with hawks and other vermin which prey upon game. Owing to that and other faults laid to his charge, heronries are much let down, but some small ones still exist, and it is really interesting to visit one in May and June—the breeding season. This is the only time herons are seen in flocks, and they build their rude nests of sticks on the top of lofty trees. The hen lays four or five bluish eggs, about the size of those of ducks. Like rooks, herons have great attachment for their favourite trees; indeed so much so, that Montague speaks of only one tree being left in a herony, on a small island in the north of Scotland, on which there was not room for the whole company, and some of them built round it on the ground. I have known instances of many of them being shot before they would leave their old haunts. The heronries were broken up upon the score that the "long necks" devoured both game and fishes, and also that their dung injured the trees. This latter charge seems groundless, at least the same may be said of rooks, and herons seldom or never frequent game preserves; but, of course, they are notorious robbers of fish in shallow rivers and ponds. I should observe, however, that during the breeding time their demand for food is so great that herons draw their chief supplies from large *meres*, as they are called in Norfolk, sometimes sixteen miles off. This distance may seem great, but a heron is of light weight, not above three pounds, and when on the wing with legs extended beyond his tail as a rudder, he soon returns with a gullet full of fishes. Perhaps the sixteen carp which Willoughby found in a heron's maw was one of those loads. After the young can shift for themselves, which is not till a consider-

able time, the whole party breaks up, perhaps, in pairs, and frequent sequestered spots near lakes and rivers to enable them to obtain their finny prey.

Although the heron is very ravenous he can fast a long time, and when hard pressed for food he will swallow rats, mice, and small birds, after giving them a good soaking in water in order to make them slip better down his wide throat. A friend of mine during a severe winter shot a heron near an unfrozen spring, and took a snipe out of his stomach. The heron has great power of digesting such diet, but he casts up felt and feathers in pellets of about the size of walnuts, in a similar way as the kingfisher does the bones of his smaller prey. It was seeing feathers in such balls that led Mr. Rayner, of Uxbridge, to discover that his tame heron had swallowed his young kingfishers. The loss was grievous, but as they were missed by only one at a time, they afforded, singly, but a small mouthful for the heron.

I possess one that swallows middle-sized rats, blackbirds, &c. But his jaws are not equal to those of a blackheaded gull which I once had, which stole some kittens from my cat; and I was surprised to see poor puss mewing after Mr. Gull, who was waving his head about, and with nothing of the kitten to be seen except its tail dangling from his mouth. As the heron is very shy, and his habits in a wild state are not well known, there are some false notions respecting him. One is that he has only one gut, and that live eels pass through his body and are again gobbled up. This seems to be only a silly notion, and may have arisen from herons dropping eels when disturbed. Nor does there appear any ground for the common belief that the scent of herons' feet draws or attracts eels from their holes in the mud. Mudie, who was a very acute observer, relates some very interesting traits of the heron. One is, that when he is hotly pressed either by a sea-eagle or a hawk in the air, he cunningly doubles his neck backwards under his wing, and turns his spear-like bill upwards near the middle of his body, all the while keeping a steady eye on his enemy above, who descends, and is transfixed before he can strike with his talons. This may be true, for a heron has a sure and deadly aim with his closed beak of nearly six inches in length. For instance: the late Dr. Neil, of Edinburgh, who spent his long life in the pursuit of horticulture and zoology, mentions, in his interesting paper on his tame herons, that he saw one of them kill a rat by one stroke on the head while it was stealing his food. Old herons are very shy, and cannot bear confinement. Some assert that they refuse food and die; but young ones are easily domesticated. Dr. Neil's pair built two nests; but owing to unfortunate accidents the eggs were broken. He states that the herons cleared his garden of snails, frogs, and toads: I suspect that they only killed the last-mentioned. This reminds me of having once lost a heron very shortly after I gave him a large toad, which he at first refused; but being very hungry, he afterwards swallowed it. In less than half an hour my heron was dead, and I found the toad close by nearly settled. On close inspection I found a milky fluid oozing through the skin of the toad's back. I tried another heron with a smaller toad; and he quickly sickened, and cast up the reptile dead with other contents of his stomach.

I have already said that young herons are easily tamed. The one I have follows me about, and thrusts his long neck into waterpots expecting to find a fish. At other times he goes down on his knees, or haunches, with his head down to his shoulders.—J. WIGHTON.

DARK-COLOURED LIGURIAN BEES.

I HAVE two hives of Ligurian bees. The queens I had through Messrs. Neighbour; but the bees of one hive seem to be a brighter yellow colour than the hive of bees, some of which I enclose *alive*, as when dead they soon lose their colour. Will you be so good as to say if these are Ligurians? This hive I had at the moors. Would this make them darker than those I kept at home?—J. W. W.

[Of the three bees enclosed, two reached us alive. They are dark Ligurians, possibly hybrids, but on this point we are unable to decide. It will be remembered that the same thing occurred to "A DEVONSHIRE BEE-KEEPER" last year. Two out of his four Italian queens produced dark-coloured Ligurians; and he was so impressed with the belief that they were hybrids, that he would not breed from them. A removal to the moors has no influence on the colour of either Ligurian or common bees.]

WEEKLY CALENDAR:

| Day of M'nth | Day of Week. | NOVEMBER 6—12, 1860. | WEATHER NEAR LONDON IN 1859. | | | | Sun Rises. | Sun Sets. | Moon Rises and Sets | Moon's Age. | Clock afterSun | Day of Year. |
|--------------|--------------|-----------------------------|------------------------------|-----------|-------|-----------------|------------|-----------|---------------------|-------------|----------------|--------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | |
| | | | | deg. deg. | | | m. h. | m. h. | m. h. | | m. s. | |
| 6 | Tu | Cherry leafless. | 29.480—29.318 | 57—40 | S.W. | ·03 | 5 af 7 | 22 af 4 | 32 a 11 | ☾ | 16 13 | 311 |
| 7 | W | Hooded crow comes. | 29.669—29.568 | 60—59 | W. | — | 7 7 | 21 4 | morn. | 24 | 16 9 | 312 |
| 8 | Th | Birch leafless. | 29.830—29.665 | 53—31 | S.W. | — | 9 7 | 19 4 | 56 0 | 25 | 16 5 | 313 |
| 9 | F | PRINCE OF WALES BORN, 1841. | 30.452—30.202 | 46—21 | N. | — | 11 7 | 17 4 | 20 2 | 26 | 15 59 | 314 |
| 10 | S | Primrose blooms again. | 30.631—30.595 | 45—26 | N. | — | 12 7 | 16 4 | 47 3 | 27 | 15 53 | 315 |
| 11 | SUN | 23 SUNDAY AFTER TRINITY. | 30.645—30.481 | 48—26 | S.E. | — | 14 7 | 15 4 | 15 5 | 28 | 15 46 | 316 |
| 12 | M | Wood pigeons flock. | 30.436—30.335 | 49—24 | S.E. | — | 16 7 | 13 4 | 45 6 | 29 | 15 38 | 317 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 51.5° and 36.6° respectively. The greatest heat, 63°, occurred on the 12th, in 1841; and the lowest cold, 18°, on the 9th, in 1854. During the period 122 days were fine, and on 109 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

WHILE the weather continues favourable make all possible speed in trenching up all vacant ground, taking care to dig in all green and decaying refuse, which is much better than throwing such substances into a heap to decay, by which a positive loss of fertilising matter is sustained. *Broccoli*, where it is growing very strong it is advisable to dig up and to lay it in trenches in nearly a horizontal position, covering the roots and stems up to the leaves. This has the effect of checking its luxuriant growth and of protecting the hearts of the plants in severe weather. *Lettuce*, plantations for spring use to be frequently looked over in the morning and all slugs destroyed. If they should be very numerous sprinkle fresh lime over the whole of the ground, either early in the morning or late at night when the weather is mild. Secure from frost any that are now ready for use. *Mushrooms*, the beds now coming into bearing to be carefully looked over twice a-week, if any very dry spots are observed on the beds slightly sprinkle them with water. *Sea-kale*, by placing pots over the roots and covering them with leaves and dung may be had in perfection at Christmas.

FRUIT GARDEN.

Proceed according to former directions with planting fruit trees, and going over the Peach and Nectarine trees occasionally to brush off the leaves, which will afford the wood a better chance of getting properly ripened. Look over the trees in the orchard to see if there is a necessity for the judicious thinning out of the branches. It is by such attention that large, fine, good-flavoured fruit is to be obtained. The work of thinning although it may be done at any time from this till March, nevertheless, the sooner it is done the better. Prepare ground for Gooseberry, Currant, and new Raspberry plantations. If there is any fruit still remaining on the trees it should be gathered immediately; that in the fruit-room should be looked over and any that show the slightest signs of decay be picked out.

FLOWER GARDEN.

Choice sorts of Hollyhocks to be taken up, potted, and placed in a cold frame or pit. They will be useful for furnishing cuttings in the spring, that by attention will flower in the autumn. Where alterations are in hand push them forward with all possible dispatch while the weather continues favourable for out-of-door work. Be careful to secure transplanted trees or shrubs against winds, if not staked immediately after being planted it frequently happens that the roots get injured by the tops being rocked about by the wind. Cut down and clean away the stems of herbaceous plants. The frequent sweeping and rolling of grass and gravel, the clearing away of plants as they wither away, the preparation of protecting material for half-hardy plants intended to be left in the open ground through the winter will require early attention.

STOVE.

Particular attention will be necessary in the application of atmospheric heat and moisture during the usually dull days of November and December, for any excess of either will be very detrimental to the plants, by causing a premature or unseasonable growth which no aftercare can thoroughly rectify. A selection of the winter-flowering *Begonias* will at this season form an important feature in the decoration of the stove, and may be advantageously introduced to the conservatory or sitting-room.

GREENHOUSE AND CONSERVATORY.

Chrysanthemums will now require an abundance of air with a liberal supply of water. Some of the different varieties of Chinese Primroses, more especially the double, will be advancing into flower, give a few of the strongest and most forward of them a tolerably large shift, using thoroughly decomposed leaf mould only with a small portion of sand. The double sort is valuable for bouquets in winter, as it retains its flowers without dropping for some considerable time.

PITS AND FRAMES.

All flower-garden plants intended to be wintered in these structures will require frequent attention; the supply of water to be limited to that quantity only which is requisite to keep them from flagging; all dead leaves to be removed; all the air possible to be given during the day, if dry, and to be shut up tolerably early in the afternoon. Finish potting Dutch bulbs, pot *Rhododendrons*, hardy *Azaleas*, *Kalmias*, *Lilies of the Valley*, and all other plants usually required and previously detailed for winter forcing.

W. KEANE.

GAZANIA RIGENS AND SPLENDENS—DOUBLE CONVULVULUSES—CRYSTAL PALACE.

I HAVE been told that a rod is in pickle for me for bringing out *Gazania splendens* as a different plant from *Gazania rigens*. But except some I had once or twice from the West Indies, along with *Melocacti*, I cannot say that I ever could well enjoy or relish pickles; but a rod in pickle may be as different to them as *rigens* and *splendens* are from each other, and they are just as ducks and drakes of Puddledock—not as some new sorts of ducks and drakes which I noticed last week on the lake for the beasts before the flood at the Crystal Palace, a cross between some fine white Aylesbury ducks which were sent to Mr. Milner and the small call duck of our south-western coast, which are white above and buff beneath, and the cross birds are of really beautiful yellowish-white, and the ducks and drakes are very much alike. But *rigens* and *splendens* are not so much alike; and the mistakes about them among some young gardeners, and some other gardeners who were once young as they, have been rightly explained already, and I do not see any good which can come out from pricking or pickling the thing much deeper.

The whole question is in the shell of a Filbert nut.

Some gardeners and patrons of gardens have never yet seen *Gazania rigens* at all; they have been growing the cross-bred plant in its stead ever since the latter was raised, and now they find there is no difference between it and itself at its second appearance. Of course there is not, but I should like to get the names of all who have proved themselves so false to their fellows as to hide the secret of their *Gazania*-beds from the rest of the world for the space of twenty-four or twenty-five years; for we lost the improved *Gazania* about London the season that Her Majesty succeeded to the throne, and no one of the many earnest pens and penmen who plied for the decorations of our country or town gardens had ever heard of a single bed of *Gazania rigens* from that day till the reappearance of the same improved sort in London, in 1859, when we booked it and gave it the name which best tells its merits.

Some did, and some could not do beds of *Gazania uniflora*. For some years past a great deal of *Gazania* discussion went through the gardening press. The best beds of it spoken to in *THE COTTAGE GARDENER* were a pair one season at Kew, but by common consent it was voted down, as giving too much growth and leaf for the quantity of blossom; and now we must needs hear and learn that a splendens was in the hands of civilised people all this time, who fattened on the crumbs from our tables, and kept their own pot luck to themselves the while.

Next summer you will see two match beds of *Gazania splendens* on the Rose Mount at the Crystal Palace; but who can send a patch or two of *rigens*, true as Prince Alfred fresh from the same quarters, to let the plants tell their own tale?

A much more interesting tale it would be to find out and relate by what process of genuine gardening the Chinese have converted *their form* of our hedge Bindweed—*Convolvulus sepium* of old authors, and *Calystegia* of our own times.

That there is only one kind or species of this *Calystegia* all over the world is a fact ascertained by the travels and researches of Dr. Hooker; and that *Calystegia pubescens*, in its natural state of singleness, is the merest variety or variation of *sepium* I have myself proved, by producing the single form of the China plant, which is now not nearly so distant from our hedge *sepium* as is the other English form of *sepium* itself—I mean *sepium flore rubro* of British botanists, and probably the *sepium incarnata* of our compiled lists. There is no other plant of the order of Bindweeds that has even been seen with a double flower except *Calystegia pubescens*; and this *pubescens* itself is the first instance on record in which a very double flower turned to the most single form and perfect bloom *per saltem*, as naturalists say—that is, at one bound or step. To prevent doubts as much as in me lies, I have sent lots of the single *Calystegia* to the Crystal Palace. I shall also send it to Kensington Gore and to Kew; and along with it, I am now glad to be able to report, a specimen of the *flore rubro*, or that most beautiful British red *Convolvulus* for which I recently sent out a missive in these pages, and a fine lot of roots of it came up safely by post from a very kind clergyman far down in the country. The ticket with the names of the plants and donor ended with—“N.B. It is a dreadful weed, but very beautiful.” That is just the way with them all—single and double. The common white is free enough in the bottom of the Crystal Palace grounds. The red one will soon be more so. The lavender single *pubescens* of my make, with the “pale very delicate pink” double one of Dr. Lindley, will be seen in these three public gardens as “dreadful weeds but very beautiful.” The two forms of *pubescens*, single and double, and the rich red *Convolvulus* of free and happy England, ought to be allowed a place among *Rhododendrons* and other Americans. I have known the white *Convolvulus* and the common *Nasturtiums* completely cover a whole bed of *Rhododendrons* and *Ber-*

beris aquifolia the second year after planting. The Bindweed got in with the fresh peat and the seeds of the *Nasturtiums* by mistake, in leaf mould and compost from the potting-shed, and some thought the bed was ruined, but I assure you they did an immensity of good. The shading they gave to the plants was far more in their favour than all the harm the roots did to the soil in the beds; for such plants, and more particularly these Bindweeds, exhaust the soil very little indeed.

It has often occurred to me to put a question to the best practice of the age, founded on the double Chinese Bindweed. A *Convolvulus* is the best shaped flower by Nature of all the flowers in the world. Florists will not be able to push one point beyond Nature of improvement in the shape of this single *pubescens*; but the double form of it is the very worst shaped we ever had in cultivation. Now, seeing the plant yields to the prying influences of the grower, that it is by Nature one of the best shaped of all plants, and that the prying influences have made it one of the worst forms of double flowers, my question is this, Is it not yet possible to have a double *Calystegia* of as good a form, at least, as a double *Petunia*? The look of the two flowers in the single state is much the same; the part which makes them double, the organs of reproduction, are much the same also; and may it not have happened that the Chinaman had pushed his art to an extreme limit in spoiling the face of this flower, according to our views of doubleness? and might we not, by a less powerful stretch of our influence over the make of such flowers, produce one much less misformed, or why not aim at making the double flower a model of symmetry? One thing is certain, and no less certain than strange, this Bindweed has yielded its own natural force to the influences of cultivation in a manner quite different from all other flowers that have been changed to a double form. The plant never seeds that we know of: therefore it was not by the application of a cunning craft on the parents of a seedling which made a double flower in this instance, but some such severe hardship as the Chinese resort to in their dwarfing system on plants, and the cramping torture on the feet of their women, and of which we know very little indeed. I am not quite clear to this day whether it was from a powerful stimulus given to the strength of the double-flowering plant or from the contrary cause that the natural state—the single flower, was produced; but this I do know, that if we did but fathom the law of that change or under which that change occurred, we should hold a powerful lever in it, to turn up and cast over many and many a flower of which we have never yet thought of altering or improving at all. Also, if we lose sight of that law, or mystery, while it is yet fresh before our eyes, we may never see another instance of the like to refresh our memories or sharpen our inventive powers for a practical interpretation thereof. Here, then, is something new beyond the reach of science, but as true as the sun to the dial, and yet it is a perfect mystery, and all our councillors and active agents avoid its consideration, being more engaged on the ephemeral shades of seedlings and showy plants than on the laws which govern them, or those by which we might mould them to our will.

If I once more point out the circumstances under which the single *Calystegia* was produced, and leave the inference to my readers, some one may, perhaps, take up the subject and push it another stage, although it may take another generation of time before any great practical use can be deduced from it. It was neither science, nor practice founded on science, nor cleverness, nor ingenuity which produced that single flower, as some have supposed, but the merest chance. A deep barrel, perhaps four feet deep, was sunk at the bottom of a large tree to plant a *Jasminum nudiflorum* in, so that the roots of the Jasmine rather than the roots of that large tree should enjoy all the fresh soil or compost. The drainage for the bottom of the barrel was half a barrowful of the rakings of a bed

in which the double *Calystegia pubescens* was a great weed, and as much as the rake could tear up of the roots of the weed were in the barrow, and when the barrel was filled the bits of roots of the *Calystegia* must have been buried three feet at the least. The barrel was set on two bricks to make a hollow under it, so as to keep the roots from below from getting into the barrel by the drainage holes, and to keep the roots inside the barrel from getting out into a cold subsoil already occupied with roots. That was in the beginning of May, 1846; and in July or August, 1847, the *Calystegia* began to show itself very weak on the top of the barrel, and climbed up about three feet that season. In 1848 it grew seven or eight feet high, and bloomed single for the first time, and for the next three years the plant continued to gain more and more strength; from which I inferred at first that burying the roots so deep as three feet had almost exhausted all their strength, and that by the time the growth reached the surface all the force of the roots was well nigh gone, and that was the cause of the flowers coming single instead of double. But, supposing that to be the right view of the case, a repetition of it with the roots of a different kind of plant would not, probably, give the same result, for another law of vegetable extension was all the while in active force.

When the soil in the barrel was examined, the roots or underground growth of the *Calystegia* was far stronger and more healthy looking than I had ever seen; and so far down in the barrel as I could reach, they were one complete sheet of coil round the sides of the barrel, without wishing to occupy more of the soil, so to speak. The way I can account for the extension is this: The first move of growth from the broken roots at the bottom of the barrel was horizontally till it reached the side of the barrel at the very bottom, where the air from the drainage holes was most active, then the growth coiled round the barrel, and by the time the first circuit was made it was the natural time for the point of growth to get out to light and air, and so as to be able to keep on the balance of growth between the leaves and the roots; but the balance of growth was all on one side—on the side of the roots, during the next fifteen or eighteen circuits of growth round the side of the barrel, and all that time not a fibre of new roots was made on the coils till they were just at the surface; then, though the growth of the coil was so strong the shoots made from it were as weak as possible. The length of under-surface growth of that coil must have been hard upon forty feet inside the barrel. All that growth was made in eighteen months without the aid of a leaf or that of fibres ramifying in the soil; but I shall leave you to decide whether that was a great addition of strength or a great source of weakness to the plant. You have the simple facts just as they occurred, and the result for the next three years. Just turn them over in your mind and see if you, also, may not be able to make some plant double by some kind of operation, or a double one single at one bound by doing contrary to what you had done to double the flower. But while you are thinking it over, I shall tell a greater wonder to some of my country cousins, not clansmen.

On the 27th of October I went to see Rarey's method of breaking horses for the first time at the Crystal Palace, being a good deal in that line myself between forty and fifty years back; and, if you believe me, he did it exactly as colts ought to be done—hurt not a hair of their body; let them stand on their legs, and on their hind ones if they have more than one pair, but bring down their noses to the grindstone. Look at them, and they will soon see how simple and powerless they stand, and you will have no more bother with them. Sam Slick himself could not have done it more after Natur'.

However, what I was going to tell was about the propagation at the Crystal Palace, and about the beds. On the 1st of November not a bed, or border, or vase was touched there for housing, except two kinds of variegated

Geraniums, and they were from beds of *Verbena Empress Eugenie*, so that no gap was left behind. *Ignescens superba* Geranium was the finest bed I have seen this season, or ever seen of that class of Geraniums. You could not put the point of the umbrella into one large bed of it without displacing flowers, and there was not one faded amongst them. It is the best Geranium for "making up" when one is not tied to some arrangement where any colour will do just as well, or any height of plant. But to understand making up, take two match beds of *Delphinium formosum*, or even one bed. Well, do what you please with it, but it will be over by such a time in July or August, and it is as bad as any stroke in gardening to leave it one more day in those beds: but out with it, and in with something else in full bloom, so as not to lose a day, and yet not miss the charming blue so long as it lasts. The something else is the making-up plant, and none are better than *Ignescens superba*.

The *Ageratums* were then splendid in their way. *Calceolaria amplexicaulis* as good as you have ever seen it at Kew; and *Calceolaria integrifolia* one sheet of yellow, and better than ever I saw it. This, the original kind, is the best of them all for bedding. *Farfugium grande* 6 feet across, and as large and glossy and variegated in the leaves as was ever seen at shows in pots. The old purple *Nosegay*, or *Mrs. Vernon*, must be planted there next year with the *Farfugium*, as *Punch* is not *Punch* enough to *Judy* with so strong a customer. The *Crystal Palace Dahlia* is the brightest of them all. *Nemophila edgings* just going off. All kinds of *Heliotropes* safe from frost. *Corymbosum*, the favourite one for bedding, for its less free growth, and more branchy for bloom. Country people think there is frost in July when they see beds of the dark *Heliotropes* as if they had been just pinched that morning. The *Japan Lilies* were still in full feather, and the *Scarlet Geraniums* were the most done-up things in the garden. Every leaf and vestige of *Tom Thumb* are out of their books entirely; but what I wanted to know was if a ninth competition appeared for the merits of the *Crystal Palace Scarlet Geranium*. But no more than eight have yet put in their claims for it. The propagator told me he put in from 17,000 to 18,000 cuttings of that one *Scarlet*, and that all the old plants of it that could be would be saved.

Thousands of cuttings of the *Variegated Alyssum* were just put in, and plunged in sawdust in a greenhouse heat, and the end of October they find is their best time for them; and the *Calceolarias* and hundreds of the *Liliput Dahlias* were just rooted in bottom heat from October cuttings. All the *Geraniums* they like to be rooted before September is out, and the variegated kinds were being potted into 60-sized pots. D. BEATON.

WINTERING CUPHEAS, LOBELIAS, AND DAHLIAS.

COULD I keep *Cupheas* and *Lobelias* that have been in the beds all the summer if I take them up, and put them in a cold frame all the winter—in pots I mean? And are ashes good for packing up *Dahlias*?

[*Dahlias*, if taken up sound, are as easily kept as *Potatoes*. If the roots are thoroughly matured, dry ashes or dry earth is excellent for packing them in. Avoid sawdust, it is apt to heat. We knew fifty pounds worth killed by it.

The *Cupheas* will keep easily. You should cut in the *Lobelias* so as to leave the young shoots only from 2 inches to 3 inches in length. Give all the air possible. Damp will be your opponent in their case.]

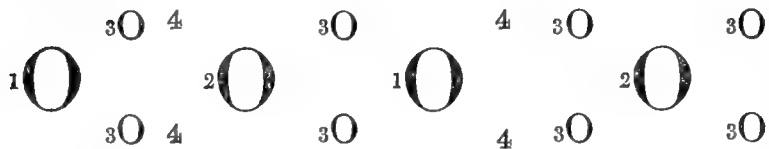
THE KING OF THE PUMPKINS.—What the market people call the "promenade of the king of Pumpkins"—that is, the parading of the largest Pumpkin of the season, took place in Paris on Oct. 16. "The king" this year weighs 315½ lbs., and measures 10 feet 2 inches in circumference at the widest part. It was put up to auction, and knocked down for 128f.

PUTTERIDGE BURY AND ITS FLOWER GARDENING.

(Continued from page 60.)

ON entering the flower garden at Putteridge by the terrace walk at the east side of the mansion, the first object we meet with is the long ribbon-border which runs parallel with the east walk. It is of considerable length, and returning at each end some distance. This border is about six feet wide, and there is a much greater width than that of grass between it and the walk. A break in it, caused by a noble vase being placed at the intersection of two walks, divides it in two compartments, which is made use of by planting them slightly different; but the features are the same, and the eye is not offended by the change. The border and walk run parallel with the east side of the mansion, but at some distance from it, and for distinction it might be called the "east terrace walk." This walk is bounded on the other side by the sunk panel garden, called, I believe, an Italian garden; but as the outlines have already been described at page 60, the reader will be more interested in hearing the details.

The east terrace ribbon-border having been in years gone by planted in stripes of various kinds with good and varied success, it was determined in the present season to alter this arrangement; and instead of the striped ribbon a spotted one was produced in the following manner:—



1. Calceolaria amplexicaulis, planted in a circle of about three feet and a half wide.
 2. Geranium Purple Unique. These two were planted alternately.
 3. Single plants of Geranium Alma—a good, variegated kind.
 4. Ground colour, Verbena pulchella, lavender blue.
- As before said, there was a break in this border, and the other portion was planted in precisely the same manner, only other plants were used—as thus:—

1. Calceolaria viscosissima.
 2. Ageratum mexicanum.
 3. Geranium Cerise Unique, single plants.
 4. Ground, Alyssum variegatum.
- It will be seen that the above arrangement made the circular dots stand clear above the ground colour, and the single plants did so also. Taken as a whole, perhaps this did not look so well as the continued stripe; but it must be borne in mind this border was mostly seen in a cross and not a lengthways direction—and it had been a striped border so often before, some change was necessary. The ground colours were well chosen, and the symmetry of the other plants could not well be improved upon. It looked pretty well.

Turning westward at the south extremity of this walk we have the Italian garden again at our right, and on our left we have three circular beds each ten feet wide, raised a foot or more above the turf, and a bow like a handle spanning each bed. The rustic timber work which raises the bed is covered with Ivy, the dark, sombre appearance of which contrasts well with the paler hue of the turf and other things around. These three beds, with two small ones between them, occupy the same space on the left that the Italian garden does on the right; and these beds being planted to give a shaded character to the colour used, the edgings and handle are prominent objects. The first and last of the three large beds are planted alike—thus: Outer edge Ivy; then one row of Cerastium tomentosum, intermixed with a few plants of blue Anagallis to hang over the edge; and the centre is old Scarlet Variegated Geranium and Verbena venosa mixed. The handle is clothed with a Tropæolum and a slight covering of Ivy—the latter confined to a mere twig or two: this looked very well. The deep green of the Ivy edge with the adjoining one of Cerastium contrasted strongly with the more subdued colouring inside; and at the distance (say the mansion), the handles which faced that way had a good effect. The second bed had also the Ivy outer edge; then a ring of Verbena pulchella, and purple and white Verbena mixed for centre. The handle was covered with a Maurandya and slight coating of Ivy—the latter, doubtless, to give the winter effect. This bed hardly so effective as the other

two, but the centre good. The two small beds, each four feet wide, had a standard Rose trained on an umbrella-stand for centre. The outer edge of the umbrella was secured to the ground on its four cardinal points by wires bracing it in that direction. These wires, being stretched to the outer edge of the bed, had small creepers trained to them; and as there were many such beds in the garden, this description will suffice for the whole. The bed being four feet wide, and the umbrella about two feet and a half, the wires had a slanting direction to meet it, the whole being about three feet and a half or four feet high. The two beds now in question were raised about six inches, the rustic work being covered by a rim of Sedum roseum, a hardy herbaceous plant much used at Putteridge Bury, and which, even when the flowers are in a withered state, looks well. The interior of these beds was a mass of Cerastium tomentosum. Both beds being alike, the wire being covered with creepers, as Lophospermum, Tropæolum, Maurandya, &c.

As we are now close to the Italian garden it is right to take a glance at it, forming as it does a prominent feature in the place. It is, I believe, a square panel, sunk from three to four feet below the terrace which surrounds it on a level on all its sides. I am very sorry I did not ascertain its dimensions, but believe it to be about 200 feet square or thereabouts. An excellent broad walk with ample turf margin surrounds it on all sides, and there is a fountain-basin in the centre. The descent to it is by turf slopes, and with the exception of some stone pavement surrounding the basin, the groundwork of the garden is all turf. The figure is like all similar gardens—a purely geometric one, but is more plain than many such gardens usually are—in fact, being on grass much intricacy cannot well be carried out. The beds were of fair average size, and numbered, perhaps, about eighty. Unfortunately I did not count them, being more intent on noticing the planting than the figure; but I may say the divisions of turf were about four feet between the beds.

This general description will enable the reader to form an idea of what Mr. Fish had to deal with; and it is now necessary to turn to the planting, which, I have no hesitation in saying, was more to my mind than the plan of the garden itself. It would be impossible, in a narrative like this, to describe the individual plants used in each bed without a plan of the garden appearing with it, which is inconvenient; but it is proper to say that the planting was done in such a way as to have the whole of the beds of a uniform height, excepting those at the corners and adjoining thereto, which were lower, the four corner beds being the lowest of all, and those next to them gradually rising. This was very effectively done, and the harmony of colours was also good. Notwithstanding the untowardness of the season the Verbenas had done pretty well in most cases, and were, in addition to Geraniums, Calceolarias, and Petunias, extensively used here, and the whole looked well in this garden.

J. ROBSON.

(To be continued.)

WINTERING PLANTS IN A STABLE.

PLANTING WILLOWS—CLIMBERS FOR A SUMMER-HOUSE.

My gardener proposes placing on a stand in a three-stall stable all the plants he has removed from the beds and potted, to keep through the winter. They consist of Geraniums, Calceolarias, Verbenas, Fuchsias, &c. Do you consider this will answer? and will it be injurious to the horse?

All my Willows which I planted this time last year died. Would you inform me the best month to plant them in? And as I want a couple of handsome trees to plant on a bank sloping to the water, would you name two kinds, and where in the neighbourhood of London I am likely to meet with them? Is not the Napoleon Willow considered one of the best and most ornamental?

Having just erected a skeleton summer-house intended to be formed by covering it with creepers, I should be obliged by the names of those likely to cover it the soonest, and the proper time to plant them. The wood and iron work is 7 feet high, 6 feet in length, and 5½ breadth. Would a free-growing Vine do for one plant?—TEDDINGTON LOCK.

[“Where there is a will there is a way,” and on that principle your plants will be as safe in that stable as any such plants can be anywhere; but let the gardener have sufficient time to do them his own way. Bedding plants do no harm to horses, or to their owners if they are kept clean and tidy in sleeping conservatories.

Any one who lost Willows from transplanting this season should learn some practical lessons on planting before another attempt of the kind. Unless the Willows were killed by the frost we can hardly conceive a condition in which they could die during a shower of nine months duration. Now and for the next month to come is the very best time to plant Willows. The Huntingdon Willow is, of course, the finest and best timber tree of all the race, and a match pair of it will look noble on your bank. *Salix alba* is the book name for it, and any nurseryman can supply you with this kind of Willow. The Napoleon Willow is the same as the common Weeping Willow along both sides of the Thames as you go to London; but if your bank were ours in that place and aspect we would not plant a Weeping Willow on it for half the value of Teddington. Nor would we plant two kinds of one family in that way.

For a summer-seat of that size no plant is so good as the Japan Honeysuckle; it is all but evergreen, blooms all the summer and autumn, and never gets an insect on it. It goes by the names of *Lonicera flexuosa*, *Caprifolium flexuosum*, and two or three other names; but *japonica* is the best name, and *flexuosum* is the most general name for it in the London nurseries, and now is the time to plant it. If you should prefer a Vine, the Claret Grape is the best of them all for a summer-house. Ours is now richer in the leaf than the Virginian Creeper; but till this season we did not know the Claret was the hardest of all the Grapes in England. Our crop of it is very nearly ripe, while Miller's and all the White kinds are as sour as Crabs. But the only use we ever made of the Claret Grape was to colour apple-tarts puddings and pies with it.]

MILDEW ON VINES AND PEACHES—GISHURST COMPOUND.

So much has been said from time to time since 1845 as to the cause of the mildew on various trees, Grape Vines, &c., more especially some sorts of our Peaches and Nectarines, that it has become like our Potato disease—one does not like to hear the very mention of the name.

When I say since 1845, it must not be inferred that we had no mildew in our vineries and on our wall trees before the above date, but previous to that time it was what might very properly be called mildew, and we have the same sort of mildew now. But all the wet of this season has not produced that sort of mildew up to this time, not to any very great extent; but now is the season we must expect the mildew on all our soft-wooded plants, but not that sort of mildew we see on our Peaches and Nectarines. Continual dampness produces mildew, let the temperature be high or low; but how are we to reconcile ourselves to what is called the mildew in our vineries?

Let the external atmosphere be what it may, we can so regulate our houses that no continual dampness remain in them. The same treatment or thereabouts was carried out twenty years ago, and no one ever noticed then what is now called the mildew. We all have known some small gardens with a small greenhouse in them, with Vines and plants all together, but no mildew; but since 1845, when the Potato disease made its appearance, it has, under the most skilful treatment, been seen more or less in a great many of our vineries and on our wall trees.

I have some wall trees which for years have had the mildew or what I think must be quite a different thing. Be that as it may, all the dressings of the usual mixtures of soft soap, soot, &c., dusting with sulphur, and so forth, did not cure the disease. It certainly kept the disease in check, so that it made little progress during the season; but in the spring, when the trees had made about six inches growth, it began to make its appearance, no matter how the season was; and that is the case more or less every season since, more especially with the Vines at the time of stoning.

This season I thought I would see what the Gishurst Compound would do. Early in the season in one vinery I syringed the whole of the Vines with the Compound in the mild form of two ounces to the gallon, and not the least sign of the disease has appeared.

The Peach trees I allowed to grow until the disease was visible, I then syringed them with about three ounces to the gallon of soft water. In a few hours the disease had turned quite black. Since then the trees have made an excellent growth, and, considering the season, will ripen the wood tolerably well.

Gardeners generally, especially the older portion of the craft, are very dubious as to whether the Compound is really what it is represented to be; but none can expect to know until they have given it a fair trial. My first trial was with a three-light frame of Verbenas. I at first felt anxious for a few hours to know if I had destroyed the plants as well as the fly, but they were all cured the first dressing. No second dose is necessary, if properly mixed in warm, soft water. I am trying it on some other things, including Potatoes. You may depend it is one of the greatest boons to the gardener for more purposes than destroying insects.—G. D., *Hammersmith*.

DOES GAZANIA SPLENDENS DIFFER FROM GAZANIA RIGENS?

I WAS much amused with the cleverness with which our friend Mr. Beaton turned the tables on the "YOUNG GARDENER" and others, by telling them they must have had *splendens* all the time and did not know it, though we do not agree in the morality of giving a well-known old plant a new name in order to make a demand for it in the market. The writer from Pilsby Nurseries, page 46, seems to be in this respect under a similar delusion. He owns that what he saw grown as *splendens* was nothing but *rigens*, and yet the same as his own *splendens*.

A great gardener told me this season I had the *rigens* right enough, and he had the *splendens*, and it was so much better; and I begged him to take a bunch of mine home and contrast them with his, and he wrote me he was bound to say mine was the more splendid of the two.

This season what for more than twenty years I have called *rigens* has received the name of *splendens* from scores of visitors, and I said nothing. Others have asked me the difference between *rigens* and *splendens*; and having only one plant of the latter, so called, I owned I could not tell. But some, like a lady visitor, were rather disappointed that after, through the representations of THE COTTAGE GARDENER, she purchased four dozen at 30s. per dozen, she could find no difference with *splendens* and that she had grown for years as *rigens*.

I certainly never saw this *Gazania*, whatever its specific name, so fine before this season, damp and sunless as it was. In the dullest days the flowers would be pretty well expanded and a perfect carpet in quantity. I believe, therefore, that those who like things with fine names, and even new names, would, no doubt, be pleased with the flowers as well as Mr. Beaton and the Pilsby Nursery able correspondent. But that is not the matter in dispute, nor the part where the shoe pinches. The grievance, if grievance there be, is just this—that a plant, generally known over the country as *Gazania rigens*, through the recommendation of THE COTTAGE GARDENER, has been sold as *Gazania splendens* at 30s. per dozen, whilst the same thing might either be at home in abundance, or could be procured easily at from 4s. to 9s. per dozen! I believe that all the parties concerned acted *bona fide*—their name and reputation are a guarantee for that; but all the pleasant joking of Mr. Beaton, the poetry of the new name, and the thousand pounds it realised, do not quite reconcile a lady for the spending £6 for several dozen of a plant she already has in plenty. To remove all this "being-done-for" feeling, no one shall be more glad than myself to find that the varieties when grown together are really distinct, and the one so superior over the other. Meanwhile the discussion ought to show that authorities must be careful in their recommendation, otherwise confidence will be apt to be lessened. I am quite as likely to be deceived as the rest, and perhaps more so. As stated above, I have a good-sized plant of *splendens* in a pot under glass; the flowers on this 24th of October are larger than those out of doors still in a bed, otherwise the markings, &c., are just the same. During August and September the plants in the beds, and which I have known as *rigens*, produced far larger flowers than the plant in the pot. I feel unable to do more to dispel the mystery if there be one, but would like the varieties to be compared by a suitable authority.—R. F.

I SENT a note the other day on this subject. In that I expressed a wish that flowers and leaves of all kinds of *Gazania* might be sent to the Editors in order to settle the disputed point. I help to do so, by sending four packets of leaves for your inspection.

The flowers of Nos. 2, 3, and 4 are so alike that it would be no

use sending them. There were buds on No. 1, but no bloom, but my friend told me it was much the same as the others. My friend has a nice shrubby plant of No. 1 in a pot. I would pay much more deference to his judgment than my own, in either floral or botanical distinctions, and he assures me that No. 1, with the rather upright, grass-like, awl-shaped leaves, is the true original *rigens*. You will observe that there is a great difference of the foliage of No. 1 and all the rest. No. 2 is the true *splendens*, obtained through a nurseryman direct from Messrs. Henderson. The leaves are shorter, slightly more rounded, and if anything more white beneath than Nos. 3 and 4. The white shows a little on the upper side also, and from standing often obliquely you catch the view of the under side. I think, also, that the plant altogether inclines to be dwarfer and more trailing than No. 3, though my friend owned that this season No. 3 bloomed most profusely, and that the blooms individually were quite as large as No. 2. No. 3 is what I have long known and grown as *rigens*, but never had it so fine as this wet season, thus giving a hint as to its culture. No. 4 is from a strong plant of what was sent to me as *splendens*, differing little except in having the leaves a little broader than No. 3, longer than No. 2, and also in the stems being much more abundantly stored with milky juice. All who know *rigens* under the character it presents under No. 1, and under which aspect my friend tells me it is not very free blooming, would have reason to be pleased with No. 2, which, no doubt, is a great improvement. If they had previously had No. 3 as *rigens*, they would be too apt to imagine they had got a distinction without a difference. There is also a considerable difference between No. 2 and No. 4, if you scrutinise the leaves closely, so far confirming our friend Mr. Beaton's statements as to the number of varieties. A drawing of these leaves, especially No. 1 and No. 2, would settle the point as to the distinct varieties at least.—R. F.

[We have printed the foregoing letters because we would not have any of our readers suspect that we are not willing to have our errors, or the errors of our contributors, fully exposed whenever they occur. In the present instance, however, we think that there is no error except on the part of those who for many years have been cultivating *Gazania splendens* under the misapplied name of *G. rigens*.

We never saw the latter in cultivation, but we have referred to the coloured drawing of it in the "Botanical Magazine," vol. i., t. 90, and if that drawing is correct, it is unmistakeably distinct from *G. splendens*. The petals are fewer in number, the white marks on the dark brown of the claws of the petals are totally different in form, and some of the leaves are of a shape quite varying from those of *G. splendens*. To enable our readers to identify *G. rigens*, we copy the following description of it from Martyn's edition of Miller's "Gardener's Dictionary."

"This is a low-spreading plant, with woody stalks six or eight inches long, trailing on the ground, having two or three side branches, each terminating in a close head of leaves, which are narrow, green on their upper, but silvery on their under surface, and cut into three or five segments at the end. The peduncles arise from these heads, are six inches long, naked, and support one large orange-coloured flower; each floret in the ray has a dark mark towards the base, with white intermixed." The words which we print in italics, besides the other points of difference we before mentioned, make the flowers quite distinct from those of *G. splendens*. Those who wish to see a coloured portrait of the latter may do so in plate 29 of Messrs. Carter's "Illustrated Bouquet."

If our readers will refer to our No. 623, they will see Mr. Beaton's account of the origin of *G. splendens*, and his belief that it is a cross between *G. rigens* and *G. uniflora*. We should have thought that *G. pavonia* more likely to be one of the parents. Mr. Beaton refers to the "Botanical Register" of 1835, but the volume he had in his mind is twenty years older than that. In 1815 ("Bot. Reg., i., t. 35) is a coloured portrait of *G. pavonia*. The claws of the petals, or rather florets of the ray, have each a distinct arrow-head-shaped mark. Its leaves are pinnatifid. Mr. Sydenham Edwards there observes, "In *G. rigens* the circle that encompasses the foot of the ray is black, here (in *G. pavonia*) of a hazel brown on the inside, and blue on the opposite surface. At Messrs. Colvilles' and Mr. Knight's nurseries we have seen a plant which we take to be a hybrid, or cross production of the two, partaking, in almost equal proportions, of those parts in which the parents differ, but altogether smoother and more robust than either; the very circle of the ray is partly black, as in *rigens*, and partly brown, as in *pavonia*."

Of the *Gazania* leaves sent by our correspondent, Nos. 3 and 4 are entirely alike, and like those of a well-cultivated *G. splendens*. Those marked No. 2 are altogether shorter, and of a darker green on the upper surface. Leaves No. 1 are totally different from either, and so approaching to awl-shaped, with the end rather expanding into a lanceolate form, with a revolute edge, that we suspect them to belong to *G. subulata*; but no one can be certain upon the point without seeing the flowers.

We shall be obliged by any one sending us plants of what they believe to be *G. rigens* and *G. subulata*.—Eds. C. G.]

GRAPES SHANKING.

I HAVE a large vinery of Black Hamburgh Grapes planted twelve years ago, and the Grapes shank every year. The border is four feet deep, and the soil is bad. What would you advise me to do with the border? What book would you advise me to purchase on the cultivation of Vines?—T., A SUBSCRIBER.

Another correspondent, "A. B. B.," has his Muscats of Alexandria similarly shanked this year, "and the leaves turned yellow as they do in autumn. The Vines are planted inside the house; but the greater part of the roots have grown into the border outside, which is very wet indeed, and some of the roots are quite at the bottom of it."

[These are only two out of a score of letters all agreeing in complaining of shanked Grapes, and all making statements in one form or other, showing that the roots are growing in a temperature too cold in comparison with the temperature in which the branches and leaves are luxuriating. To one and all we give the same answer: Raise the roots to within eighteen inches of the surface, and by placing bricks, &c., below them prevent them descending lower; manure the surface so as to tempt the roots to ascend; cover the outside borders with tarpaulin or other shelters, so as keep from them excessive rains and cold; drain them thoroughly where wet. Again and again have we told inquirers that they must keep the roots of Vines as warm as they do their branches. If they do that, supply them on the surface with a little manure annually, and do not allow the roots to descend deeper than eighteen inches, they will have no shanked Grapes. Mr. Ashman in his communication to-day sustains what we now, and so repeatedly, have recommended.]

CONSTRUCTION AND MANAGEMENT OF AN ORCHARD-HOUSE.

As many orchard-houses have been built, and many more will be now that their practical utility is so fully recognised, I think it may be useful to give a few hints as to their management, the result of four years' experience. But first let me say a few words as to the construction of an orchard-house.

No one is more conscious how much the gardening world owes to Mr. Rivers than myself; and I would recommend those who have not read his "Orchard-house," to procure it. The enthusiasm with which it is written is delightful, but I believe some of his directions as to building can only be carried out under very favourable circumstances.

In this neighbourhood Oak for posts is expensive, and if it were cheaper I would not recommend its use. A wooden house with a glass roof is, after all, only a glazed shed, and if not intended to be heated can never be so safe from frosts as a good brick building. Without glass sides much fruit will be shaded and inferior; with glass sides and one end glass, so few bricks are required that it can never be worth while to sacrifice durability and appearance in attempting to do without them.

The house we recommend is a span-roofed house 60 feet long by 20 feet wide, the bricks laid in Portland cement, the sides and one end glass, costing about £105. If this be larger than is required, 40 feet by 20 feet is a convenient size. We have one which cost £66. No better houses need be built as orchard-houses, and if heated they would be equally adapted for green-houses or vineries. If the glass end is towards the south the light will be more equally distributed—one side having the morning sun, the other the afternoon. I would not build an orchard-house less than 20 feet wide. A large body of air is, of course, less quickly reduced in temperature, and at twenty-feet house will be safe from a frost that might be injurious in a narrow building.

Whilst travelling in Scotland lately I found many persons who talked of orchard-houses as failures, and gave myself some

trouble to find out the reason. In some places narrow houses made of thin boards, not even closed at the joints, had been erected; and in the climate of some parts of Scotland I was not surprised to hear that even the plants had been killed, knowing that near Glasgow Black Naples Currants and some varieties of Gooseberries are often killed to the ground. In others, provided with a heating apparatus, the gardener had placed large numbers of bedding plants, and given just "a little heat to keep out frost." The flowers came out early; the weather being very severe he could give no air—his blooms dropped; the Peaches being crowded by plants, such as Calceolarias, Geraniums, &c., were covered with smother fly, and "Mr. Rivers was a humbug, and orchard-houses all humbug too."

Another person had filled a house with Pears; and though he had plenty of fruit, his master would not eat some and could not eat others. When I told these persons our sixty-foot house had for years produced from 100 to 150 dozen of Peaches and Nectarines, such as they had never tasted from an open wall, and that we never calculated on a failure as probable, I saw they thought me almost as great a humbug as Mr. Rivers; but we will leave these individuals with the remark that in a few years we believe those who build expensive walls in a bad climate to grow Peaches and Nectarines will be considered certainly no geniuses. Talking of walls, what can have induced so many persons to build lean-to houses? Is it that the first greenhouse was a glass shed erected over a tree—a Vine, perhaps—already growing on a wall, and that we all, sheep-like, must follow in the same track? Can any one point out the advantage of the style of building? If the front is high enough to stand with your hat on, and the house of any width, you must require a ladder to train a Vine or gather Grapes. If it is devoted to plants, you must often turn them round or they will grow to one side. If Peaches are trained to the wall, you can have no breeze playing amongst their flowers, so conducive to their setting freely, and you have the sun shining only on one side of the fruit, causing it to be overripe on one side whilst green on the other—one of the greatest causes of deficiency of flavour. We trust the days of the ugly lean-to house with its plant-stages and other inconveniences, are numbered, as well as those of Peach walls. I will now give the result of our experience in the management of an orchard-house, and if others will do the same it may be beneficial to all interested in the subject.

We will suppose the fruit all gathered. We top dress or pot the plants at once in good turfy loam rather dry, and make it pretty solid, but not so much so as the first season, as we found when too solid and kept dry all the winter there was a difficulty in watering them properly the following year, the ball shrinking from the pot sides, and the water escaping by the space left; for the same reason we do not let the soil get so dry as formerly, watering them several times during winter. When they have lost all their leaves the plants are painted over with a mixture of Gishurst Compound, six ounces to a gallon of tobacco water, to which is added a little clay, cow-manure, lime, and soot, then put together, and some leaves thrown over their pots.

The house is left open every day when there is no frost to keep back the bloom. When they begin to show signs of starting in the spring the house is cleared of litter, the plants pruned and put in their places. The house is now kept open whenever there is no frost; if there is a cold wind one side only is opened, but we shut every night for fear of frost.

When the bloom is fairly out we give air whenever it is not too cold or windy; if too cold to open the house, or there are no bees about, we dust the blooms with a camel-hair brush to make sure of their setting, performing this operation in the middle of a sunny day, and shutting the house early to retain a little warmth during the night.

At this period the house is kept as dry as possible, unless a frost so severe as to endanger the bloom occurs, which has only happened once during the last three years. We then syringed with cold water the first thing in the morning, and suffered no loss in Peaches or Nectarines, though the Apricots, which were as large as Peas, required less thinning than usual. Whilst in bloom great care should be taken to guard against the smother fly, as, if these are numerous, all hopes of fruit setting are gone, and daily attention is necessary to guard against these enemies whilst the plants are in bloom. As it is better not to syringe when the plants are blooming, a boy looks over the house every day, and if he sees any fly, touches them with a painter's brush dipped in a solution of two ounces of Gishurst Compound in a gallon of tobacco water. Never was the adage of "a stitch in

time saves nine" more applicable than in this case. During the growing season the plants may be stopped as often as necessary to form them into pretty bushes. After the fruit is set we syringe every day, in very hot weather, morning and evening, and shut up the house early till the fruit is ripe, finding it earlier and better ripened than when we ventilated more. The fruit is thinned out twice, and only from one dozen to fifteen left on a small tree (twenty-five are enough for any tree in a pot): it takes some time to be convinced of the bad policy of leaving too many fruits on a plant.

Once a-week, after the fruit is big as Walnuts, our plants get a good dose of manure water—not thin manure tea, but horse, cow, and sheep-manure mixed almost as thickly as will pour out of a pan with the rose off. We do not allow the trees to root through the pots into the bed below them, but feed them in the pots; roots growing through soon stop the drainage holes. With this treatment nothing can be more satisfactory than our orchard-house, and no single person of the many I have invited to taste the Peaches, Nectarines, or Apricots has said they were no better than wall-fruit; whilst most declare they never tasted such fruit before, that from the walls bearing no comparison in point of flavour.

We have discarded Pears, as they were generally worthless; and Plums, because we did not think them good enough, nor improved in flavour. When we consider the number of houses built to grow Grapes, and the coal consumed in the process, we may be sure now that fruit, which many value more highly, can be grown without fire heat. The days of orchard-houses are but just beginning: one builder in this neighbourhood is making quite a trade of erecting them.—T. R. PEARSON, *Chilwell*.

METHOD OF PRUNING THE PEACH TREE.

THE following is translated from a work entitled "Elementary Instruction on the Management of Fruit Trees," by M. A. Du Breuil, member of several French Societies, published at Paris in the present year:—

"For several years past general attention has been directed to a mode of pruning of which we have refrained speaking till a sufficiently extended trial had proved its advantages. This new mode was first adopted about 1847 by M. Picot-Amet de Aincourt, near Magny (Seine and Oise), and shortly afterwards by M. Grin the elder, of Bourgneuf Chartries, but with a remarkable improvement. We have seen in October 1856, at M. Grin's establishment, such excellent results of this method, after being applied during five years on the same trees, that we have no hesitation in recommending it to the exclusion of every other."

The following is a description of the practical carrying out of this process:—

"When the side shoots from the main branches attain a length of about two inches and a half the back buds are removed; then only one bud is left at each point where double or triple ones occur, those in front being retained. At the same time these shoots are submitted to a very rigorous pinching—i.e., they are stopped with the thumb and finger above the two well-developed leaves nearest the base. The little leaflets imperfectly developed at the base are not reckoned, these often form a rosette at the lower part of the shoot.

"Soon afterwards a fresh shoot (*bourgeon anticipé*) is seen to spring from the axil of each of these leaves. These last are likewise pinched as soon as they have attained a length of about one inch and a half, but this pinching takes place above the first leaf. Fresh shoots again appear at the axils of the leaves of the first. But the season is already advanced, and the sap acts with less intensity, so that their development is feeble; they often only attain a length of a small part of an inch. Those of the extremity only attain a little further extension. Both are pinched above the first leaf as soon as they are one inch and a half in length. If fresh shoots appear after the third pinching, they are removed altogether.

"After the fall of the leaves and at the time of the winter pruning, these different shoots result in the assemblage of spurs shown in the *figs.* 1 and 2.

"The different pinchings which we have just described have the effect of weakening the side shoots, by concentrating all the action of the sap towards the leading shoot of the principal branch. Thus each of these shoots has given rise to spurs of weak growth, and covered with flower-buds.

"At the pruning of these spurs they are cut at the points A.

(figs. 1 and 2), so as only to retain the branches covered with fruit-buds towards the base.



Fig. 1.—Fruit-spurs of the Peach submitted to the new system of pruning.

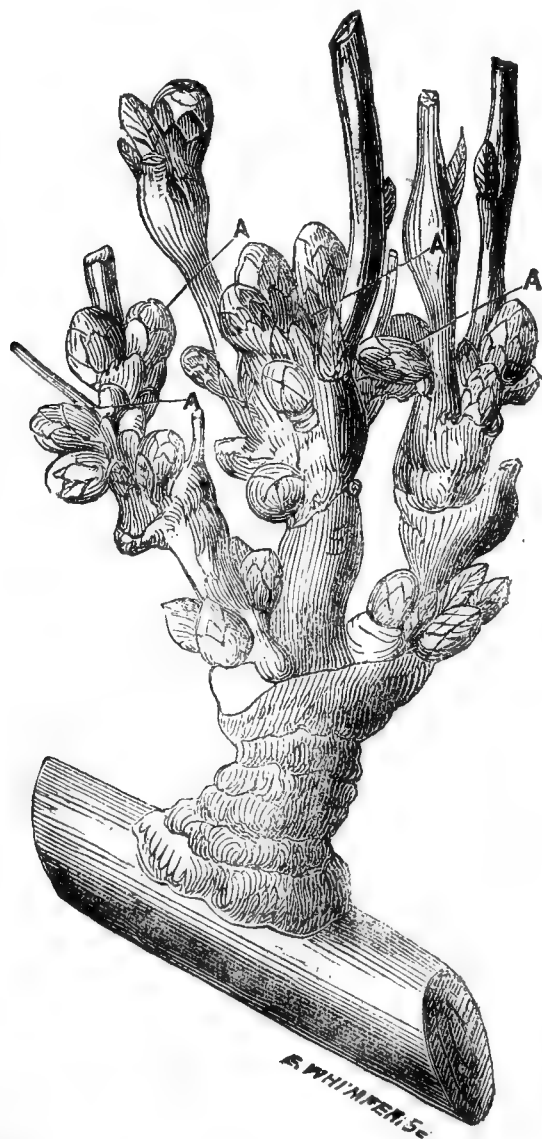


Fig. 2.—Another fruit-spur of the Peach, the result of the same operation.

"During the following summer the new shoots which spring from sundry wood-buds placed among the numerous flower-buds, and which develop themselves at the same time, are submitted to similar pinchings as in the preceding year; and at the period of the second winter's pruning they are again cut very short, to concentrate all the action of the sap towards the base, and cause fresh fruit-bearing-spurs. The same mode of operation is repeated each year.

"As to the numerous fresh shoots which spring from the final buds of the main branches, those at the back are entirely removed. The others should be pinched as soon as the second pair of leaves are sufficiently apparent, and the eyes of the inferior leaves sufficiently formed. Then only the pair of leaves next the base are retained. If this operation takes place too late the pair of leaves at the base are drawn out by the elongation of the axis of the shoot, and we have at the winter pruning a spur formed as shown in fig. 3.



Fig. 3.—Fresh spur, the result of an anticipated shoot pinched too late.

If too early, before the eyes are perfect at the axils of the lower leaves, the shoot dries up, as shown in fig. 4. When, finally, this pinching is done at the proper time, the shoot ceases to extend, and the lower pair of leaves remain at the base.



Fig. 4.—Fresh spur, resulting from a shoot pinched too early.

The branch is thus formed at the time of the winter pruning as displayed in *figs. 5 and 6*.

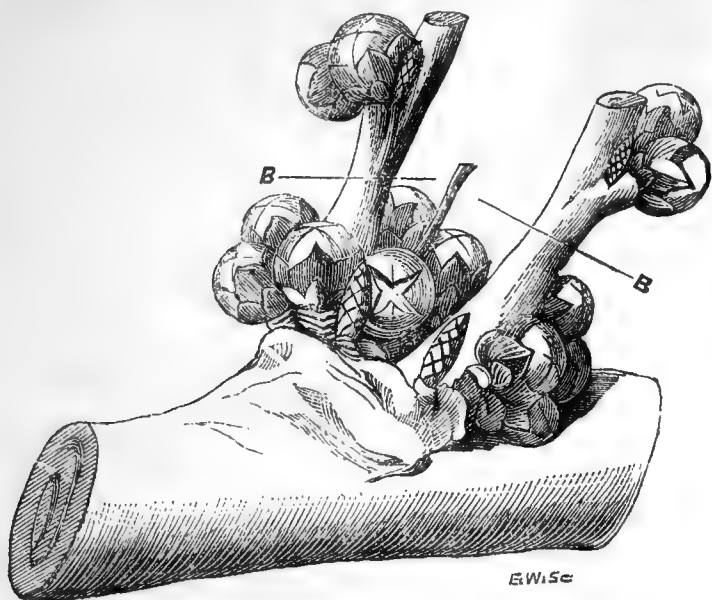


Fig. 5.—Fresh spur, resulting from a fresh shoot pinched at the proper time.

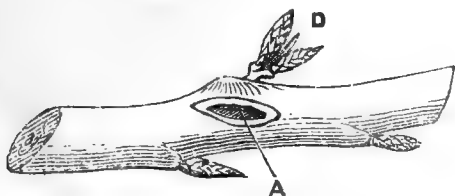


Fig. 6.—Small fresh spur, resulting from the incision and pinching of a fresh shoot.

Nevertheless, it often happens that these fresh shoots develop themselves so vigorously, that, in spite of the pinching, their axils continue to elongate, and they draw with them the two leaves of the base. To prevent this inconvenience M. Grin advises an operation, of the efficacy of which we have made proof. As soon as one of these vigorous shoots appears, an incision of about half an inch is made with the grafting-knife on one of the sides of its point of junction with the principal shoot. This incision stops the elongation of this shoot, it hardens, and the eyes placed at the axils of the leaves are formed. After six or seven days the pinching is practised as we have before explained. This operation gives the result shown in *fig. 6*.

"All the fresh shoots having been pinched once, some of them give rise to one or two generations of shoots. These are pinched above the leaf nearest the base, as we have explained with respect to the first fresh shoots of the shoots properly called. These operations give rise to spurs constituted as in *figs. 3 and 5*, which are then cut at B.

"Occasionally after reiterated pinching of the fresh shoots we obtain a little spur covered solely with flower-buds (*fig. 7*).

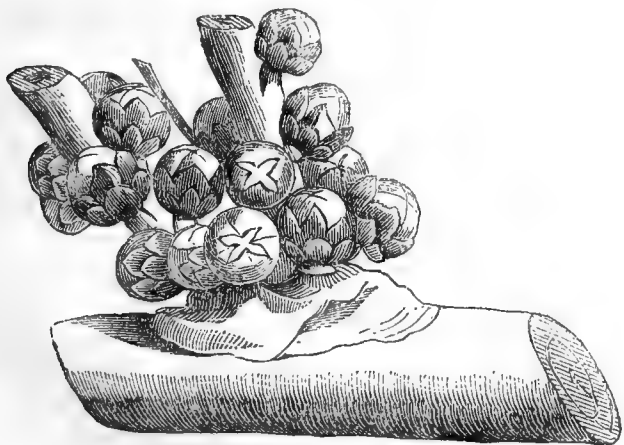


Fig. 7.—Fresh spur, producing only flower-buds.

If we let it fruit it dries up after the gathering, and leaves a void in its place. To prevent this accident it will be as well, according to M. Grin, to remove at the winter pruning

all the flower-buds (*fig. 8*), and then to make at A a deep incision, penetrating below the insertion of this spur. We shall then see the appearance in the following spring of new shoots near the base of this spur, which are destined to form it in a more convenient manner, and which should be submitted to close pinching.

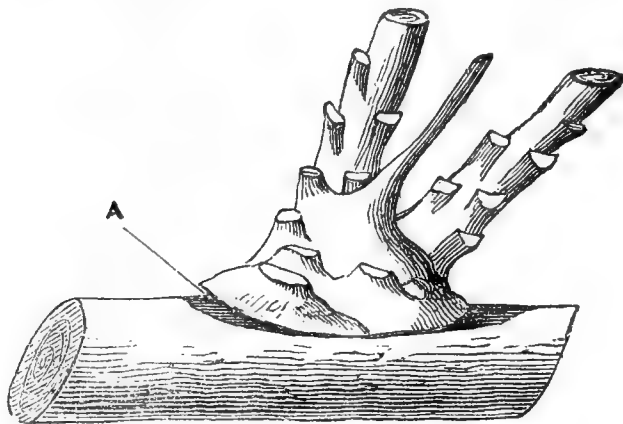


Fig. 8.—The above fresh spur deprived of its flower-buds.

"This same incision practised at the same time at the base of the long-jointed fresh spurs (*fig. 3*) will also result in the appearance of shoots, but only at the spring of the following year. It will be proper, in order to facilitate this result, to prune the ends of these spurs very short, and they are formed in a more convenient shape by means of those shoots.

"The advantages resulting from this new mode of treatment are as follow:—

"1st. We can dispense with the operations of summer training of the shoots, and winter training of the fruit-bearing branches.

"2nd. The winter and summer pruning are much simplified, and much more readily practised by all gardeners.

"3rd. As the fruiting spurs are kept in front of the main branches, the latter are protected by the leaves from the burning sun in the height of summer, which could not be effected under the old plan of pruning, by which only the spurs on each side of the branches could be retained.

"4th. The shoots and fruit-spurs being kept much shorter, it is no longer necessary to leave so wide a space between the main branches: by which means, being able to increase the number of branches on a given surface of wall, the number of fruits can be proportionately increased.

"We will conclude with the two following observations which are of great importance to the success of this mode of pruning:—

"First, it will be as well only to apply the close pinching to Peaches after the first year of planting. During the first season we should be satisfied with submitting the shoots to the old mode of pinching. At the winter pruning all the spurs should be cut at the lowest bud, and the shoot which springs from it should be submitted to close pinching. By acting thus we facilitate the renewal of the trees, by leaving them provided during the first summer with a greater number of shoots.

"In the second place, the close pinching of the shoots, properly called, should be commenced as early as possible—i.e., as soon as the shoots have attained the proper length. It is necessary afterwards to continue the pinching without interruption, according to the growth of the shoots. If we begin late, or this operation is repeated too seldom, we must pinch at one time too great a number of shoots; the result of which may be the complete suspension of vegetation in all parts of the tree, and consequently the disease of gum, the fall of the fruits, or even, as I have sometimes witnessed, the sudden death of the trees. All these accidents, which have led some persons to condemn close pruning, may be avoided if the first operation be made sufficiently early, to be repeated in succession at intervals of from fifteen to twenty days, so that the vegetation shall have resumed its course in the first shoots when we operate on the last."

FRUITING SOLANUM CAPSICASTRUM.

IN No. 629, page 37, of THE COTTAGE GARDENER, I see an answer to "H. K." on *Solanum capsicastrum*, saying you do not expect it to fruit while young. I have grown plants this year both from seed and cuttings, which at the present time are looking very pretty, with from seventy to one hundred and

thirty berries on each plant, and each plant about 18 inches high.

I find those grown from seed produce berries much larger than the plants from cuttings do. They are in pots of different sizes. I have one plant in a 48-pot with fifty berries on it which are colouring fast, and in the course of a fortnight will be a most beautiful little object.—HAMPSHIRE.

COVERING VINE-BORDERS.

I AM making a Grape Vine-border. I have drained the ground; put at the bottom concrete, then lime and brick rubbish, then best rotten manure and mould. I have made it 12 feet wide, and laid it to a slope, so that the rain water can run off; and at the end of the 12 feet, besides the under-drainage, I have put a surface drain; but as the roots of the Vines ultimately extend I intend to increase the width of the border 8 feet, making it altogether 20 feet. Now, I wish to know what you consider the best mode of covering the border—say from August to June, so as to protect it from wet and frost. There are two modes I conceive—first, by thatching the border, and then removing the thatching in June, and throwing it on the dungheap; but the objection to this is it harbours insects, mice, vermin, &c. Secondly, by having slates, so to lay the slates down on the border temporarily, which will carry off the wet and check the frost. Which is the best mode? or can you suggest a better? A temporary roofing of felt is objectionable, because of stowing away. Slate can easily be taken up and put down, and stowed away; but on the whole I think thatching the best.—AMATEUR.

[We do not think that any Vine-border wants covering or thatching from August to June. For pretty early forcing it would need covering from the second week, or the first week in October, to the end of May or the beginning of June. To cover so early as August would be to deprive the border of the hottest rays of the sun for the season; and covering should only be resorted to when the doing so will keep the border warmer and more regular than when exposed. See articles lately by Messrs. Baily and Fish on this subject.]

Slates alone we would disapprove of, because in severe frost the ground would freeze beneath them. Wooden shutters, half an inch thick and strengthened by cross and end-bars, would be better and quite as light to move; but in frosty weather and in early forcing we should like some litter or fern beneath them. This litter can only be dispensed with in such circumstances when the roots get so deep as not to be affected by sudden changes in the weather. Shutters as to room afterwards would be liable to much the same objection as asphalt, only they could be put close together without injuring each other, and, when not wanted for the border, might be made of sizes to suit covering pits and frames and other purposes. We have seen such shutters or covers made six feet by four, with cross-bars, and a ledge all round one inch and a half deep, costing about 6s. each, that have been in use more than a dozen years and hardly ever idle, and they seem not a whit the worse. Strong tarpauling may also be obtained at about 1s. per yard; and if a little fern or litter were placed on the border, and some rough slabs or poles over that to keep the tarpaulin stretched and free from the litter and the ground, it will last many years, and be easily put on and taken off and stowed away. Such tarpaulin is very useful for throwing off heavy rains in autumn, even when you wish the atmosphere to have free access to the border. Altogether, however, when economy more than appearances is to be considered, placing litter on the border and rough-thatching it would be best. The disadvantages are chiefly that in heavy snows it is difficult to get it off without injuring the thatching, and that the border, consequently, is apt to be soaked and cooled. To guard so far against this, we will mention two plans that have been pretty successfully adopted. In both cases the surface of the border is made smooth. This secured, Mr. Judd, of Althorp, has a heap of lime, sand, and very fine gravel, which is watered, and mixed, and put on the border about two inches thick or so, beat or rolled smooth, and the litter put over it. Scarcely a drop of rain will go through it. In May or June, when the litter is removed, this concreting is also removed, placed in a heap, and a little fresh lime and sand, and fresh mixing does year after year.

This is the plan that used to be followed in the case of the early houses; and, as detailed in a previous volume, by a pipe placed longitudinally along the border and a few inches from the

surface, and a thermometer thrust along the pipe by means of a long rod, the temperature could always be seen and noted. The other plan has been frequently adopted by Mr. Fish. After smoothing the border, a few barrowloads of fresh cowdung, if procurable, were plastered thinly over it, and on that as thin a layer of coal tar as could be drawn with the spade or trowel, generally thinner than a sixpence. No water will go through that. Over the tar is thrown a sprinkling of sand drift, or sawdust, and then when deemed necessary a little litter is thrown over to keep out frost, and is generally increased as the forcing commences. In May or June, when the litter is removed, the thin coating of tar is easily whipped off with a sharp spade or shovel. If a strong sun beats on it for a few days, it will often lift in good large pieces. Such tar being generally procured at about one penny a gallon, a shilling's worth will do a fair-sized border for a fair-sized house. In putting it on the man should use a plank to stand on, so as to make no footmarks. It spreads more quickly and easily if the barrel or vessel containing it is put into a fermenting dungheap, so as to heat it a little. The workman should have something tied round his legs to prevent any drops falling on his trowsers. He may roll up his shirt sleeves, and not mind a few spatters on his hands or arms. Candle grease, soap, and hot water will remove all traces almost as soon as any other dirt. The rubbing the places with grease before applying the soap water is important.

On the whole, then, unless the roots are deeper than we like them to be, we would use less or more litter on the outside border of forced Vines. For covering that border, we would prefer wood covers or shutters, or waterproof canvass free of the litter, and next to these we would prefer litter and rough thatching as our correspondent proposes, with or without the above means of surfacing the border for the winter.]

FRUITS OF 1860 AT BURNTWOOD GRANGE.

(Continued from page 66.)

WE now resume from page 11 our notes on the Vines.

The greatest and most mystic point of Grape-growing lies in the nature of the roots being as perfectly understood as that of the branches. If not, the grower may hit right for a year or two, but in the end is sure of being overtaken with some unexpected malady or failure, which is immediately attributed to various other causes when it lies at the root at last.

Many treat the Vine in almost the same manner they would an aquatic—saturating both foliage and fruit with water once, twice, and often three times each day, without once asking themselves the question or even thinking whether the roots were in the condition that would allow this useless and unnatural practice to be constantly followed up.

This again brings under notice the Vine-border that I mentioned when at Chippenham. It would be impossible for a border to be composed of more genial ingredients than that border was composed of. What, then, was the primary cause that subjected those Vines to such a direful disease? This is a question that requires serious consideration amongst all that are in any way connected with Grape-growing. This is where the mischief arose: the border was kept far too dry whilst the Vines were growing, yet the canes were kept in just the reverse state—far too wet. Never could a border be better drained than it was, so that it would have borne any amount of feeding; but there was not sufficient moisture supplied to the border to keep the roots in what was intended for them to revel in. They started in search of moisture in a horizontal direction until they came in contact with the cold clay, and, judging from the size of the roots where they entered the clay, they must have penetrated to some considerable distance; which says for itself that the ungenial soil they were compelled to abstract their food from, with the continual saturating they were daily subjected to, is wholly and solely the cause of the appearance of that uncoveted guest—mildew.

These were highly fed all through the growing season of 1859, or they would not have been then as they were. They were not constantly saturated with water in the house; but the atmosphere was kept in a humid state through the damping that was applied to the floor of the house, with the exception of when the bloom was cleaned from off the berries.

Here this year they have received the like treatment those received mentioned above. They received a thorough syringing after they had set their fruit; but not once after was there any

moisture applied more than that which evaporated from the Fuchsias and tall Cacti, which were grown and kept in the vinery until the fruit began to colour. These were syringed freely twice every day. The floor by this means was also kept damp the whole of the time, which kept up a continual evaporation until these plants were removed for the sake of maturing the fruit, some of which was ripe, and eight bunches cut on the 28th of July, when not a few of the berries were three inches and a half in circumference; and now, the 4th of October, I have cut 116 bunches, which have weighed above 170 lbs., and have enough to last no small period now.

This year's canes are fine, look healthy, and are nicely ripened—one of the principal points for next year's fruit, and traceable, such a season as this, to neither more nor less than the high feeding which was administered to them at that juncture, when they really seemed as if they would ask you for help, which here I was well enabled to supply them with; for both W. S. Featherstone, Esq., and C. M. Major, Esq., my joint employers, are the greatest advocates for this Garibaldi-like agent—liquid manure, and are also unanimous in their opinions as to the value and advantages that are to be derived from the continual use of this most powerful agent.

The cow-houses and piggeries at the farm are drained into a large tank or cistern; the stables are drained into another in the same manner; and, should these be empty, we have another large one underneath the manure-heap, where, if wanted, a quantity can be made in a few hours. From these tanks the liquid is taken and used for various kinds of vegetables, as well as fruits, with the most beneficial results.

Mildew has paid me a visit here. But why? We have a few bunches at the front of the house close against the front lights, which received the benefit of the syringe when the plants that were growing close against them were syringed, which I firmly believe was the sole cause of the pest making its appearance at all. These were never dry for many hours together; now they look dirty and scarcely fit for table, while the others that received no syringing look as clean as a new pin.

Therefore, taking in the whole treatment at a glance:—high feeding in the growing season, with a moist, growing atmosphere in the house—reversing this treatment when the Grapes begin to colour—keeping them, both house and border, as dry as possible—are some of the most essential points to be aimed at for good Grape-growing.—A. J. ASHMAN.

GOOSEBERRY AND LATE-PEA GROWING BY THE YORKSHIRE WEAVERS.

IN that part of the West Riding of York lying between Leeds and Huddersfield, may be found a number of hard-working artizans, who spend their spare time in the cultivation of their gardens, and are celebrated for the superior flowers and vegetables which they produce and exhibit at the various Horticultural Exhibitions in the district where they reside. The number of prizes which some of them obtain show that their time has not been mispent. There are some who can show their plated teapot, silver teaspoons and cup, and other valuables, and the money prizes which they receive often amount to a useful sum. A Gooseberry-grower now dead used to boast of his thirty copper kettles, and a good number of brass pans which he had won, and he had the whole of them hung up in his cottage, refusing either to sell or part with them—even when his daughters married he would buy them a kettle rather than lessen his show of prizes; and I have no doubt some of our poultry exhibitors will say, "I know by experience they would take no little cleaning."

The month of September is not the time to sow Peas to win a prize, nor has the present month (October) been a good one for the Pea-grower, yet some of our cottagers have shown some very good specimens which have caused some inquiries as to the method by which they have been grown; and Mr. Fish having last year mentioned his surprise at the cottagers' productions shown at Kirkstall, I will give the method by which one successful exhibitor grows his Peas. Once a-week or ten days a trench is thrown out and filled with a mixture of fresh loam and highly-decomposed manure. The Peas (Ne Plus Ultra is the greatest favourite), are sown in a single row three inches from Pea to Pea. When about one inch and a half high they are earthed, and in a few days receive a second earthing; they are then staked—the stakes must be a little higher than the Pea will grow. As soon as the Peas get into flower and the pods are set—and this is an

important operation—the haulm must be stopped above the fourth flower, and in the case of twin flowers the weakest must be nipped off when the pods are half grown. They must be placed in a position where they will not rub against the stakes. Water must be given in dry weather—in fact, they must never receive a check from the want of it. By attending to these few simple rules a dish of Peas may be produced which will run a fair chance of obtaining a prize.—R. S.

TO CORRESPONDENTS.

GREENHOUSE FERNS (D.).—It will be worth your while to buy our No. 518. In that you will find a descriptive list of them filling nearly two pages. You will thence be able to select those of a habit to suit various places in your greenhouse. If you send four postage stamps, stating your direction, we will send the number. If you need any further information we shall readily give it.

VARIOUS (M. A.).—The plants will not be injured by burning coke in the room if it be well ventilated during the burning. By a pole of ground is intended as much surface as is contained in a square, each side of which measures $5\frac{1}{2}$ yards, equal to $30\frac{1}{2}$ square yards. Whether the young Chestnut, the bark of which has been eaten off by some animal, must be removed depends entirely upon the extent of the debarking. If not eaten off all round, or if the inner bark is not destroyed, then, by paring off the edges of the wound smoothly with a sharp knife, and covering, and keeping it covered, with a plaister composed of clay and cowdung, the wound will heal, and fresh bark gradually form over it. If the debarking is deep and extensive, the tree had better be removed and another planted.

WORK ON VINE CULTURE (Rellum).—If you require one on out-door culture, there is none better than Mr. Roberts' volume; if on in-door culture, not one is superior to Mr. Sanders' little book; if on pot culture, that by Mr. Elphinstone; but before you buy these see if our "Fruit Gardening for the Many," will not for *fourpence* give you all the information you need.

HEATING A BOILER BY GAS (A Constant Reader).—A single jet of gas under the boiler would not keep up a sufficient heat in your greenhouse (20 feet by 8 feet), even if it be a lean-to. A ring of jets, probably, would be sufficient. Gas burnt outside the house certainly will not injure the plants inside the house.

GARDENING ON A COLD CLAYEY SOIL (Marian).—The best, because the most speedy and most effectual mode of rendering the soil "gardenable," is to pare and burn it—that is, dig off a spade's depth (about nine inches), of the surface, and piling it in a heap, burn it to a red powder as they are doing just now at the Albert Gate, Hyde Park. That red powder forked into the soil will render it more friable than any other application. In addition you may apply any quantity of limy bricklayer's rubbish, and fork that into the soil also.

DAPHNE LEAVES BECOMING YELLOW (J. M.).—The Daphne generally loses a few leaves like other evergreens. Yours have the appearance that the plant had suffered from cold, extra moisture, and deficient drainage.

VINES NOT FRUITING (W. H. B.).—We should like to have known the sort of Vines, and if they were attacked with insects or not. We are not gifted with clairvoyance, and you give no particulars. If tender kinds, the cold season might have affected them; but, then, that would not have prevented them showing fruit if otherwise healthy. We fear there is something wrong at the roots.

MAKING A CARNATION-BED (R. S. D.).—Plants of Carnations from seeds sown in the spring of 1859 must be strong enough in your part of Ireland to bear transplanting any week from October to May; but November, when the weather happens to be dry, is about the very best time to do them. Strong clay soil like yours is always more easy to manage for Carnations than light sandy soil; and the best thing for seedling Carnations on clay land is to make a raised bed 4 feet wide for them, to be 3 inches or 4 inches above the level of the rest of the ground; then the soil for the first 10 inches in depth to be one-half of your clay soil, the other half of such odds and ends as most people can scrape up on their premises, the best of which is a quantity of old mortar or plaster, and old thatch of some pulled-down building, and if it was pulled down ten years since all the better. One-half of such stuff and one-half of the ashes of burnt turf and wood make the finest and best composition in the world for all Carnations and Carnation tribes of plants along with one-half such clay land as yours is. From the days of Gilbert and the great florist his father-in-law, 200 years back, lime rubbish was known to be the best ingredient in the compost for Carnations; then decayed thatch from straw, fern, heather, or turf, and the smoke-stained turf thatch of old cottages the best of all. Such turf being in effect charcoal saturated with soot. But except in the Highlands of Scotland and in country parts in Ireland it is difficult to find this kind of thatch for compost. Then the next best substitute is burnt turf and burnt faggot wood. All the Carnation tribes are more or less alpine in the wilds of Nature, and they like free drainage more than most plants on that account; they also like a holding soil, or strong soil to hold water a long while, provided the drainage is good below, and the surface is made porous by those ingredients. They also, all of them, the Dianthus or Carnation tribes, like the full open sun, and not to be shaded by anything; and in no part of Ireland will the Carnations from seeds require the least shelter, as they are sure to be more hardy than more delicate kinds which have been raised a long time from layers.

GREEN ON STONE STAGE OF CONSERVATORY (Eight-years Subscriber).—We know of no mode of preventing this cryptogamic growth on the stonework, except painting it annually stone colour. We have heard that soaking the stone with brine occasionally will prevent it. Dr. Hogg's "Fruit Manual" is published, price 3s. 6d.

SOWING GENISTA RACEMOSA (E. W.).—The seeds of *Genista racemosa* might have been sown as soon as ripened, but will now be best kept till spring, when they may be sown in gentle heat. The plants are—1. *Genista canariensis*. 2. *Platycerium aleicorne*, or Elk's-horn Fern. There are two or three other species of the same family. 3. Some *Diosma*-like plant,

probably *Coleonema*, but you must send it in a flowering state for identification.

CALCULATING THE AMOUNT OF HOT-WATER PIPES REQUIRED.—"The article headed 'Science of Gardening,' contained in *THE COTTAGE GARDENER* of September 11th, 1860, page 355, the first column, and sixth paragraph, it reads thus:—"1175 multiplied by 60°, and the product divided by 2.1 (times), the difference between 200 and 60, will give us the quotient 236." By multiplying 1175 by 60°, and then dividing the product by two and one-tenth, the difference between 200 and 60, did not give me the answer as written."—A. RICHARDS.

[The quotient ought to have been printed 239. The divisor is 2.1 times the difference between 200° and 60°—that is, two and one-tenth times 140 = 294.]

COLD CONSERVATORY (A Subscriber).—In such a house, with no more heat than will exclude frost, from August to November, the best things would be *Fuchsias*, *Cassia corymbosa*, *Scarlet Geraniums*, *Balsams* in August and September, and *Chrysanthemums* at the end of October and November. Almost all *Camellias* will bloom from November to March if forwarded a little in more heat than a greenhouse after they have done blooming. The same may be said of all *Epacris*. If they had no extra help in summer they will not bloom much in winter. The best *Heaths* for your purpose are *hyemalis*, *Wilmoreana*, *gracilis*, *linneoides superba*, and some varieties of *ventricosa*. No *Azaleas* would bloom during that part of the winter unless they were forced into bloom, and then taken to the conservatory. *Cytisus racemosus*, *Attalea*, *unifolia*; *Coronilla glauca*; *Acacia armata*, *grandis*, *Drummondii*, *juniperina*; *Cinerarias*, *Primulas*, double *Wallflowers*, *Violets*, *Mignonette*, &c. These matters will probably be more discussed before long.

RIPENING TWO CROPS OF FIGS ANNUALLY (A. B. B.).—In your house heated by hot water you may ripen two crops of *Figs* in the year, if you cultivate the *Black Ischia*, *Brown Turkey*, *Marseilles*, and *Pregussata* varieties.

BOOKS (W. E.).—Rivers' work on the Orchard-house is 3s. 6d. You can have it from our office, post-free, if you send forty-three postage stamps with your direction. Caulfield on the Vine can be had for thirty stamps, of F. Farrell & Son, Capel Street, Dublin.

VINES AND PEACHES IN A VINERY (Amateur, Gatehouse).—Rather full answers to similar cases have been given in late numbers. We do not quite understand about planting your Vines last year and removing them now. We presume you meant potting them, and that final planting out is what you mean. As the roots are to be inside, the time of planting will not signify much, though deferring it for such a length of time may lead you in prudence to cut back your Vines again at least to the height of the front of the house, if planted there, and take very little from them next season. You might have taken several bunches if the plants had been turned out last season. Now, when turned out, we would advise the ball to be carefully broken with the hand, or the earth got rid of by passing it through the hands in a tub of water, so that the roots may be nicely spread out, and the nice fresh soil kept about them. If during winter, you can keep that soil moderately warm, first with warm waterings and covering with mat, or even a glass sash, then we would plant out at once. If there is any danger of the soil getting sodden or cold during the winter, then we would defer the planting until February or March. Other things being equal, the more the roots run in the soil before the buds break, the better will the Vines do. The kinds you name will do for the cool end, but though some like the *White Nice*, and it hangs well, others consider it a coarse Grape and would prefer another *Muscadine*, or a *Golden Hamburgh*. The *Peaches* will do best on the back wall of the late-house, and the *Figs* on the early one; but you may have *Figs* and *Peaches* in both houses, provided you do not allow the roof to be too much shaded by the Vines. Under the Vines you may have *Peaches* and *Figs* in pots in open places, or any other plants suitable as to temperature. Write again if you want more particulars.

NAMES OF FRUIT (A. M. R.).—1. Quite decayed. 2. *Figue de Naples* (?). 3. Unknown. 4. *Hawthornden*. 5. *Winter Greening*, or *French Crab*. 6. *London Pippin*.

NAMES OF OAKS (Oak Fancier).—As far as we can judge from leaves alone, A, B, C, D, G, and I are all forms of *Quercus rubra*. E, Q, alba. F, and H, *ambigua*. J, *coccinea*.

NAMES OF PLANTS (W. Gordon).—*Phænocoma prolifera*. It is a handsome plant, with crimson everlasting flowers. The culture is given in the *Cottage Gardener's Dictionary*. (A. H., Colbourne).—The *Lycopodiums*, or *Selaginellas*, cannot be satisfactorily named from barren fragments. No. 1 may be the kind known as *S. microphylla*, and No. 2 may be *S. formosa*. No. 3 is *Torenia asiatica*. (R. Sells).—We believe the sprig you sent is of *Juniperus Bedfordiana*.

POULTRY AND BEE-KEEPER'S CHRONICLE.

POULTRY SHOWS.

NOVEMBER 7th. DEVIZES AND NORTH WILTS. *Hon. Sec.*, Geo. Saunders Sainsbury, Rowde, Devizes. Entries close October 13th.
NOVEMBER 21st, 22nd, 23rd, and 24th. WEST OF SCOTLAND ORNITHOLOGICAL ASSOCIATION, GLASGOW. (Pigeons and Canary Birds.) *Sec.*, Thos. Buchanan, 74, Argyle Street, Glasgow.
DECEMBER 3rd, 4th, 5th, and 6th. BIRMINGHAM. *Sec.*, Mr. John B. Lythall, Offices, Unity Buildings, Temple Street, Birmingham. Entries close November 1.
DECEMBER 6th. HULL AND EAST RIDING. *Sec.*, G. Robson, 25, Waterwork Street. Entries close November 22nd.
DECEMBER 12th, 13th, and 14th. NORTHERN COUNTIES (DARLINGTON). *Sec.*, J. Hodgson, Darlington. Entries close Nov. 19th.
DECEMBER 12th, 13th, 14th, and 15th. CRYSTAL PALACE. (Poultry, Pigeons, Rabbits, Ornamental Water Fowl, and Pheasants). *Sec.*, Mr. W. Houghton. Entries close November 10.
DECEMBER 18th and 19th. LORD TREDEGAR'S, at Newport, Monmouthshire. *Sec.*, Mr. C. H. Oliver, Commercial Street, Newport. Entries close Nov. 21st.
DECEMBER 21st and 22nd. HALIFAX PIGEON SHOW. *Sec.*, D. R. Edgar. Entries close December 8th.

DECEMBER 28th and 29th. KENDAL. *Hon. Secs.*, G. C. Whitwell and T. Wilson.

JANUARY 30th and 31st, 1861. ULVERSTONE. *Hon. Sec.*, Mr. T. Robinson, The Gill, Ulverstone.

N.B.—Secretaries will oblige us by sending early copies of their lists.

CRYSTAL PALACE POULTRY SHOW.

WE hardly know whether it argues knowledge or ignorance of human nature that the high authorities of the Crystal Palace have selected the period of the Smithfield Show for their Poultry Exhibition. Perhaps they believe "Appetite doth grow with that it feeds upon;" and that those who during the previous week have enjoyed cattle and poultry in Birmingham, will be anxious to do the same the following one in London. We know that some people like a whirl, and seek for excitement. Such like pleasures running one into the other. Railways have made them common; and the man who travels now and then, but rarely by the loop line of the South-western, and who, warned by experienced travellers of the duration of that twenty-miles journey, is provided with sherry, wraps, and sandwiches, looks almost with awe at that tall man who at three o'clock in the afternoon says he *must* be at York or in Liverpool that night. The latter class is far more numerous than people imagine; and we have heard of one who is perpetually lamenting the lack of coronations—he is anxious that there should be three in a fortnight, that, by means of express travelling night and day, he might see them all and feel that he *must* endure the fatigue and discomfort. All of this class will be delighted that the Shows run one into the other. London will doubtless be full as usual of those termed by Cocknies "country people" in contradistinction to themselves. The thousands who go to Baker Street are not nearly made up of them, but of those who, living in London, have connections in the country, and annually receive their visit during the Cattle-Show week, and with them go to this and other places of exhibition. There is a great influx of visitors. Look at the newspapers. "Cattle Show! Madame Tassaud has added Youngman and Mullins to the Room of Horrors!" "Cattle Show! All your expenses paid by buying £5 worth of Grocery of Tees and Figs!" "Cattle Show! Photographs with all the latest improvements!" The "tout," got up regardless of expense—"Permit me, my lady—I beg pardon, your Grace, to introduce this new *hart* to your notice. Ah! your Grace, excuse poetry—

"Of those for whom we fond affection cherish,
Secure the shadow ere the substance perish."

It was wrote by a man who put off having the likeness of the lady he loved till it was too late in this style only two shillings." Perhaps agriculturists may be tempted to visit the Show at the Crystal Palace, as there is so much more to be seen, and as they are pleasure-seeking. Strange to say, the dwellers in towns are the amateurs of poultry—they keep them at any inconvenience, and often at great cost; while those who can do so without sacrifice seem to think it *infra dig.* to keep or have anything to do with them. So far as we have gone, then, the time would seem to be well chosen.

Our next task is with exhibitors. The Crystal Palace Show is deservedly popular with them. The prize list is a liberal one—the birds are well cared for and punctually returned. We are in a position to affirm, that everything has been so arranged for the comfort and well-doing of the birds, that it is almost impossible they can do otherwise than improve while they dwell in the Palace. Every one must accord a great merit to Mr. Houghton—that of meeting the views of exhibitors. One proof is given by the reduction of the number of Game pullets from two to one in every pen. Another boon is the creation of new classes for "Brown-breasted and other Reds, except Black-breasted." A most interesting novelty is that for ornamental water fowl, and for Gold, Silver, and other Pheasants. In both cases it is stated pens will be properly prepared for them. Lastly, there are sweepstakes for one hundred Game Cocks at 10s. each. It is proposed to divide them into seven prizes, if one hundred, or or into a smaller number if necessary. Under any circumstance all the money will be divided. The sum offered in prizes is £443 10s.

We have done with time and exhibitors; we have lastly to deal with the birds themselves.

It will strike many at first sight, that it will be a great trial for birds to contend one week at Bingley Hall and the other at the Crystal Palace; but it must be borne in mind it is winter time, when the temperature is far less injurious to such trials than it would be in summer, and when the nights and the consequent

rest are very long—nearly two-thirds of the twenty-four hours. A nother favourable point is, that it is an admitted fact, many pens of birds leave Bingley Hall in better condition than they enter it; also, that in going to the Crystal Palace they are not entering a close, confined, or a limited space, but a very large, airy, and comfortable place, to become tenants of excellent cages supplied with perches. We have felt it our duty to make inquiries, and we have received the satisfactory assurance that arrangements are made by which birds may be sent direct from Birmingham to the Palace, or there will be time for them to visit their owners between the two Shows. They will be received and well attended to on the 7th, 8th, 9th, or 10th of December, and nothing will be spared that can contribute to their comfort or well-doing.

THE FIFTEENTH RULE OF THE BIRMINGHAM POULTRY SHOW.

THE following statement will, I think, further illustrate the truth of Mr. S. Barlow's remarks in No. 630 of THE COTTAGE GARDENER relative to the 15th rule of the Birmingham Poultry Show.

At the late Crystal Palace Show I purchased Mr. Philpot's pen of Brahmas, and have since purchased a third pullet, in order to be able to compete at Birmingham; but to my surprise I find it will cost me 22s. 6d. to do so. Being near home I have entered them for Devizes, which Show takes place on the 7th inst. The entries for Birmingham close on the 1st; so that, if I enter for the latter and my pen should be sold at the former, my 22s. 6d. will be thrown away.

It may be urged that I could put a prohibitory price on them, or, that if they fetch a good sum it would be an equivalent for the 22s. 6d.; but this does not prove that the Birmingham charges are not high.

What is the inference? I keep my money in my pocket, and my birds at home, when they will undoubtedly be fresher and better prepared for the contest at the Crystal Palace, where I can exhibit them for the reasonable sum of 6s., and at a Show which I presume is second to none in the country.—ALFRED HEATH.

ON THE MANAGEMENT OF POULTRY SHOWS.

IN fulfilment of a promise made to you some time since, I send some friendly remarks on the management of most of our Poultry Shows. I do so in a very friendly spirit, as I should like to see the present prosperous condition of the poultry movement continue.

I will begin, then, with our leading Show—BIRMINGHAM. This Show is generally so well managed, and its prize list so liberal, that it is somewhat invidious to find fault. I should like, however, to see a class this year for Cochins-China hens and pullets. This reasonable request has so often been made by exhibitors, that I am surprised the managing Committee have not attended to it. I think, also, it would be a great convenience to purchasers of birds if the Secretary's office were less crowded this year than it was last—if, in fact, no persons were admitted to the office except such as had come on business. Would it not be as well if it were to be understood that the names of purchasers of birds were not to be given up to any inquisitive person who wished to know them? Last year one had only to ask and the name of the purchaser was given to you immediately. Now this is, I think, wrong, for it is not every gentleman who wishes his name to be given. I think that this Show will have eventually to reduce its high subscription entrance. Many exhibitors have complained to me that they would like to exhibit one or two pens of birds at Birmingham, but the £1 subscription was a hindrance to them. I see the same complaint has been recently made in THE COTTAGE GARDENER. However, such faults as I have found are but trifling, and every true lover of poultry looks forward to the Birmingham Show with great pleasure.

THE CRYSTAL PALACE.—A liberal prize list and excellent management are the characteristics of this Poultry Show. The Secretary does his best to cater for the amusement and convenience of the public. The only improvement I would suggest is, that Bantams should pay a smaller entrance fee, unless, indeed, our liliputian friends should receive better prizes. The managing Committee have been blamed for holding their winter Show so soon after Birmingham; but their reason is, I think, a fair one—viz., that it is held at that time in consequence of the Smithfield Cattle Show being held then, and many persons will

doubtless attend them both. I see the Secretary of the "Palace Show," as it is called, offers to receive birds direct from Birmingham—an offer which, for obvious reasons, is not likely to be accepted.

LIVERPOOL.—This is, *par excellence*, the most select of our Poultry Shows. Containing only a limited number of pens, nearly all of which are first rate, it is generally a great success. This is one of those Shows at which several members of the Committee exhibit their own birds. Now, this is fair and reasonable enough; but I think it would be as well if exhibitors were informed that no gentleman on the Committee of the Show who exhibits is in the show-yard while the Judges are making their awards. I do not mean to insinuate for one moment that there is any unfairness, but I think some little explanation is due to the public.

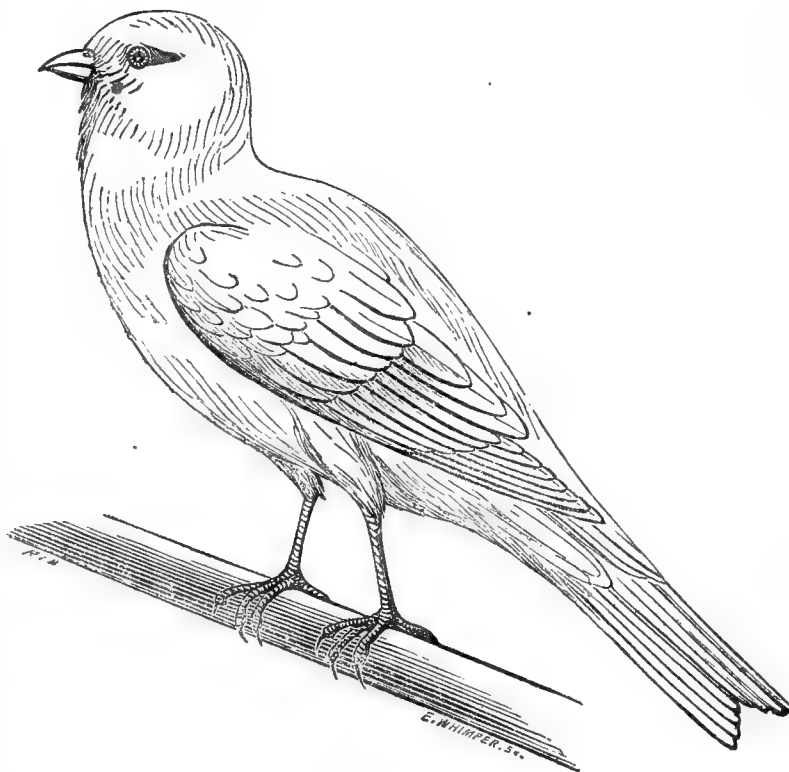
SHEFFIELD.—There would not be a better Show in England than this if the management were somewhat improved. The Committee consist of only five members, two of whom are exhibitors. In a town like Sheffield, where there are so many admirers of poultry, the Committee of the Show should consist, at least, of fifteen or twenty members.

(To be continued.)

THE CANARY AND THE BRITISH FINCHES.

(Continued from page 70.)

12TH VARIETY.—GERMAN CANARY.



THE Canary from various accounts appears to have been first introduced into Europe through Italy; thence they have spread through the Tyrol into Germany. The Swiss and the Germans have been long famous for their Canaries.

In the translation from the French of M. Hervieux, 1718, chap. xxi., page 126, is the following:—

"Some Germans resort to this city (Paris) twice a-year—that is, in spring and autumn, who bring over thousands of Canary birds from Tirol and the southern parts of Germany. But it is not to be believed, as some still do, that the Canary birds they bring are bred in the cold parts of Germany. As soon as they come people resort to them from all parts—some out of curiosity, to see whether they have any Canary birds that are not of the common sort, others go to lay out their money. These last are better received than the former; but when you go to ask questions of them concerning their Canary birds, or other such like affairs, without buying anything, they give you a very bad reception, and, in short, they use you very roughly, making good the proverb *Point d'Argent, point de Suisses*; or *no money, no Swiss*; but as soon as you show them the precious metal, without which the most ingenuous man is not valued—I say when they perceive you come to buy some of their Canary birds, they receive you very courteously, and in their broken

language express themselves very much your humble servants; and that they value your money no less than your person."

M. Hervieux considers these German Canaries more delicate than the native-bred ones, and fills five pages with his reasons why they are so.

W. A. Osbaldiston, Esq., in his "British Sportsman," 1792, under the head of "Canary Birds," says, "But of late years there is a sort of bird that is brought in abundance from Germany, especially from Tirol, and are therefore called German birds, being a much better sort than the other, though their originals are supposed to have been first brought from the Canaries."

Even to the present day a great number of Canaries are annually imported into this country from Germany, and are well known to fanciers as German birds. Nor is it to England alone, but to many other countries, the Germans export Canaries. Some idea of the extent of the trade may be gathered from the following extract from one of our weekly newspapers:—

"A THOUSAND SINGING BIRDS FOR AMERICA.—Amongst the 'passengers' by the 'Washington' steamer which left Southampton on Wednesday with the United States mails, were upward of 1000 singing Canary birds. A cabin was fitted up for them close by one of the paddle-boxes. Almost every one of the birds was in a separate cage. This cage is dome-shaped, and is of basket-work, about 8 inches long and 4 inches in height and width. Canary birds are exported in large numbers from Bremen to New York by the Southampton steamers, and they are collected from all parts of Germany. Although the cages are cleaned and the birds fed with great dexterity, it takes a long time every day to attend to so many. Some of the Canaries exported from Bremen are famous for their song, particularly those from Saxony, and others are distinguished for their shape and colour. The latter kind of birds are half as long again as the ordinary Canary, their bodies are slender and arched like many of the birds of prey. They have long legs, their colour is a rich yellow, and their heads are beautifully spotted. Some of the birds taken out in the 'Washington' had won prizes at Antwerp."

The Germans as fanciers have many varieties; but that to which I now wish to draw attention seems to be the prevailing kind, most extensively bred, and is the bird generally known as the German Canary. It is a small bird, the smallest variety of Canary which I know of; it is neat and pretty in shape, bearing some resemblance to a diminutive Norwich bird, which it also resembles in colour, being either Jonque or Mealy, sometimes almost white with red eyes—indeed, in general, if you look at the eyes with a strong light on the opposite side, the light shines red right through the head; it is considered tender and delicate of constitution, but is much prized for its sweet song. Some of the imported birds are taught to sing different songs by means of flageolet or organ, and according to their performance are they of greater or less value.

There are, however, many very common and mongrel-looking birds sold in this country as German birds; and though they may, perhaps, come from Germany (which is very doubtful), still they can have no pretensions to the name of the German Canary.

With this breed I conclude all the varieties of the Canary bird with which I am acquainted.—B. P. BRENT.

DEVIZES POULTRY SHOW.

WE are informed that the entries for this Show are for full 300 pens, and including many from the most celebrated breeders. The most numerous entries are in the classes for Spanish, Dorkings, Cochin-Chinas, Game, Hamburgs, Bantams, and Ducks. The Show of Game fowls may be anticipated to be unusually excellent, and we should think it a likely Show for purchasers of all breeds to obtain birds at a moderate price.

LACED WING-COVERTS IN SPANGLED FOWLS.

I WAS pleased to see that Mr. James Dixon has noticed the absurdity of requiring laced wing-coverts in otherwise spotted fowls. I believe the error arose from the different meaning of the word "laced" as now used, and as formerly applied in the old rules for Pheasant fowls—namely, 7th wing,—“4th, The lacing, on top of the wing above the flight,” &c. Here the word “lacing” means a part of the wing, not the marking of it.

I fear the Judges' opinions will be of little value unless they have been practical and experimental breeders of the variety.

I have had to call attention to this absurdity before, as also the matching Yorkshire cocks with Lancashire hens, combining white tails and dark hackles—Black-breasted Red Shanghai cocks with Grouse hens instead of Partridge-coloured, all which is done to please the Judges—calling English fowls Hamburgs; Sussex fowls Dorkings; Birchin Ducks pure Duckwings; Black-breasted Reds Black Reds; and lastly, English Rabbits Himalayans.—B. P. BRENT.

HAMPSHIRE ORNITHOLOGICAL ASSOCIATION'S EXHIBITION OF CAGE BIRDS.

THERE is a likelihood of the Exhibition at Southampton in December being the best ever held in the kingdom, not excepting the Crystal Palace Show of feathered favourites. It is under most distinguished patronage; and the Committee have just now issued, in pamphlet shape, their code of regulations, together with the schedule of prizes given for nearly a hundred classes of birds. There will be prizes of money, medals of different sizes, pieces of plate, and valuable cages, as well as cards of merit for special minor specimens. Successful competitors in very many instances will have the option of receiving medals or their value in money. We have pleasure in announcing, for the information of exhibitors, that all cages and packages of specimens will be conveyed gratuitously by the South-western Railway Company, to and from Southampton, on all parts of their lines.

The Committee will speedily publish further particulars in an official advertisement.

OUR LETTER BOX.

COMPARATIVE HARDINESS OF DORKINGS (*Banker*).—The dark Dorkings have always been considered harder than the lighter ones, but they are not as large. Having said so much, we may add that the constitutions of all fowls have been so improved of late years, that old rules are hardly to be observed, or old opinions to be received. We believe the Grey are now hardy enough for any climate, and it is beyond a doubt they are the best birds for the table.

SIZE AND FORM OF POULTRY BASKETS (*E. H. G.*).—The first requirement of a poultry basket is, that it be round, high enough for the birds to stand upright in it, and that the top be strong canvass, so that if the birds fly or jump up they will not injure their heads. They should be quite 30 inches high, 28 inches in diameter for four fowls, 22 inches for three, made of ordinary wickerwork, and as close as possible. There is no necessity for any contrivance for food. The fowl is in sorry condition and unfit either to travel or for competition, if it cannot bear any delay that is likely to occur.

VARIETIES OF RABBITS (*B. P. B.*).—The Dutch Rabbits are small, compact, hardy little animals, and very good breeders. They have very short, upright ears, and are generally parti-coloured. They have more the appearance of coloured wild Rabbits than of our English tame ones. We cannot say if these be the same as those mentioned by "R. S. S." The Rabbits called Patagonians are of two kinds, one sometimes called the Hare-Rabbit and sold as a hybrid. The other is the Lapin Belier of the French. This latter is, we think, larger than any other.

RABBITS FOR PROFIT (*W. W.*).—The best kind of Rabbit, if numbers be required, is, we think, the little Dutch one above mentioned. Very frequently these Rabbits are, on account of their good qualities as nurses, used as such by breeders of the more delicate kinds. The common English brown Rabbit is large, fattens easily, but is not to be depended on for breeding true to colour, as there are hardly any stocks where any great pains have been taken with them, so little have Rabbits been appreciated in England.

SIZE OF RABBIT ENCLOSURE (*Idem*).—It is difficult to assign a proper sized place for a hundred young Rabbits to fatten in. It would be better to have four smaller spaces than one large one. The dimensions may be left to choice and convenience. The young Rabbits fatten very easily if kept quiet. They should not be exposed where there is any chance of their being worried by dogs, as they lose flesh very quickly when frightened or disturbed. At a rough estimate, we would say that a space twelve feet by six feet would make a good pen for young Rabbits when weaned. In such a one from twenty-five to forty might be kept.

LONDON MARKETS.—NOVEMBER 5.

POULTRY.

Prices have not been so well kept up during the past week. The unusually high prices of the last two months have checked the demand.

| | Each—s. d. | s. d. | | Each—s. d. | s. d. |
|--------------------|------------|----------|-----------------|------------|----------|
| Large Fowls..... | 4 | 6 to 5 0 | Pheasants..... | 3 | 0 to 3 6 |
| Smaller Fowls..... | 3 | 0 „ 3 6 | Partridges..... | 2 | 0 „ 2 3 |
| Chickens..... | 2 | 6 „ 3 0 | Grouse..... | 2 | 0 „ 2 3 |
| Geese..... | 6 | 0 „ 6 6 | Pigeons..... | 0 | 8 „ 0 9 |
| Goslings..... | 0 | 0 „ 0 0 | Hares..... | 3 | 0 „ 3 3 |
| Ducks..... | 3 | 0 „ 0 0 | Rabbits..... | 1 | 4 „ 1 5 |
| Ducklings..... | 0 | 0 „ 0 0 | Wild ditto..... | 0 | 8 „ 0 9 |

WEEKLY CALENDAR.

| Day of M'nth | Day of Week. | NOVEMBER 13—19, 1860. | WEATHER NEAR LONDON IN 1859. | | | | Sun Rises. | Sun Sets. | Moon Rises and Sets | Moon's Age. | Clock after Sun | Day of Year. |
|--------------|--------------|------------------------------|------------------------------|-----------|-------|-----------------|------------|-----------|---------------------|-------------|-----------------|--------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | |
| | | | | deg. deg. | | | m. h. | m. h. | m. h. | | m. s. | |
| 13 | Tu | Green whistling plover seen. | 30.327—30.237 | 41—18 | E. | — | 17 af 7 | 12 af 4 | sets. | ● | 15 29 | 318 |
| 14 | W | Larch leafless. | 30.281—30.203 | 28—19 | E. | — | 19 7 | 10 4 | 44 a 4 | 1 | 15 20 | 319 |
| 15 | Th | Beech leafless. | 30.297—30.241 | 42—25 | E. | — | 21 7 | 9 4 | 46 5 | 2 | 15 9 | 320 |
| 16 | F | Apricot leafless. | 30.239—30.130 | 47—31 | E. | — | 23 7 | 7 4 | 57 6 | 3 | 14 58 | 321 |
| 17 | S | Teal arrives. | 30.185—30.162 | 48—25 | N.E. | — | 24 7 | 6 4 | 13 8 | 4 | 14 46 | 322 |
| 18 | Sun | 24 SUNDAY AFTER TRINITY. | 30.286—30.250 | 49—32 | S.W. | — | 26 7 | 5 4 | 27 9 | 5 | 14 33 | 323 |
| 19 | M | Fieldfare comes. | 30.298—30.170 | 50—22 | S.W. | — | 28 7 | 4 4 | 39 10 | 6 | 14 19 | 324 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 47.2° and 34.6° respectively. The greatest heat, 62°, occurred on the 16th, in 1840; and the lowest cold, 15°, on the 16th, in 1841. During the period 117 days were fine, and on 114 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

THE fine dry weather that we have been favoured with of late has been most propitious for getting up and storing Carrots, Beet, &c. Let the ground they occupied be trenched, and where the soil is of clay or strong loam let it be ridged that the frost and air may act beneficially on as large a surface of it as possible. Clear away dead leaves from all growing crops, and fill up blanks as they occur. *Artichokes*, immediate attention to be given to protect the roots from frost, although it may not be considered necessary in some favoured situations, nevertheless it is always best to be on the safe side. *Cabbages*, all that are sufficiently grown to admit of being earthed up should have that attention paid to them before severe frosts set in. Red Cabbages for spring use may still be planted. *Cauliflowers*, as those that are now producing heads are very valuable, the greatest care should be taken in protecting them from frost; they may be dug up, and planted in frames, or hung up by the heels in a very cool shed. *Endive*, take up and plant in a frame some of the most forward. *Radishes*, where these are required the year round it will now be necessary to sow on a slight hotbed; after they are up air to be given at every favourable opportunity. *Rhubarb*, a few old roots may be taken up, and planted in boxes or large pots, to be placed in a Mushroom or any other house where the temperature is 60°.

FLOWER GARDEN.

Where it is intended to leave the flower-beds empty during the winter, let them be well turned up to the bottom, and if the soil is poor, the application of a good dressing of leaf mould will be found to be the best restorative; as strong manures, by causing an over-luxuriance of growth, are inimical to the free production of bloom. The present is the best month for planting hardy *Roses*: the ground to be prepared by thorough trenching and turning, and at the same time adding plenty of rotten dung, which should be well incorporated with the soil as the work goes on. Avoid cutting or straining the roots in lifting, and preserve as many as possible. Prune the ends of broken roots, and cut away all the suckers. Deep planting to be avoided. Standards to be secured to stakes, and mulched as soon as possible after planting. *Dahlias* must by this time be all out of the ground: the best place to keep them is under the stage of the greenhouse. *Carnations* and *Picotees* will require but little care beyond giving those in frames a free circulation of air and water as they need them. *Verbenas* to be placed in the greenhouse near the glass, and to be moderately supplied with water. The least appearance of mildew to be banished by sulphur.

FRUIT GARDEN.

Continue to prepare for fruit-tree planting, by draining, trenching, and pulverising the soil. When planted, stake, tie, and mulch the trees in good time. If any trees had been planted too deep, or where the soil had been raised above or about them since they were planted, it is

advisable to fork the roots out carefully, and to plant them again with care on the surface, spreading out the roots, and then to be mulched over. If any established strong-growing fruit trees are unproductive, fork about the roots at some distance from the stems, and prune back the main or strongest roots as you find them: very beneficial results are sure to follow from such an operation. Whenever the leaves are off the *Apple*, *Pear*, *Plum*, and *Cherry* trees on walls, they may be pruned and nailed forthwith; also, *Currant* and *Gooseberry* trees.

FORCING-PIT.

Introduce a batch of the first-potted Dutch bulbs, hardy *Azaleas*, *Kalmias*, and *Rhododendrons*, of which the hybrids from *R. caucasicum* will be found the most suitable, and other such plants usually employed in early forcing.

GREENHOUSE AND CONSERVATORY.

During dull weather fires will be required to be lighted in the morning, that the houses may be thrown open during the day to promote a free circulation of air. Let the surface soil of the pots be stirred, to remove moss, &c., as well as to promote a free evaporation from the surface. Seedling *Cinerarias* and *Calceolarias* to receive a shift if necessary. If the plants are strong put them into their blooming-pots. After potting to be placed at the warm end of the house.

PITS AND FRAMES.

Abundance of air to be admitted night and day as long as the weather keeps mild, and a temperature of 32° can be maintained.

W. KEANE.

MISTAKEN DEDUCTIONS FROM EXCEPTIONAL EVENTS—GAZANIAS.

DID you ever give a serious thought to a subject which has occupied some polished cast steel pens for the last two months or more—I allude to the hints, the reasons, and the recommendations that have been given to us by writers of the same genus and kind of feathers as ourselves, on the subject of practical inferences to be deduced from exceptional occurrences? It does not appear just the thing to rely with much faith on crossing over the Thames on the ice, because, once in the lifetime of the oldest inhabitant, he not only got over like the rest of them, but got also what was of much more use to himself—a slice of the joint which ruled the roast on the ice on that memorable occasion. If the people who took the benefit of the act of roasting an ox on the ice, were led into the belief that they could do without providing for a dinner on such a day or week in such a month of the incoming winter, because the roast on the ice would come in aid of their former means for dining, would you not join with me in the vulgar tongue to pronounce the fact, that it just served them right if they were compelled to do without dining on every anniversary of the roasting-on-the-ice, because they inferred they should dine on the

ice, which was a very uncommon thing, or, in other words, they deduced laws from exceptional events?

The summer of 1859 was so exceptionally dry and hot, that new rules for getting hold of water, and for keeping it for use, were as freely suggested as if every succeeding summer were to add to the effects of that which went before it. The summer of 1860 turned the tables without, seemingly, turning the thoughts of any one of the prophets, whose rules are and have been deduced from the exceptions of natural laws, so to speak. No ox has been sacrificed on the ice of the Thames since 1814, and no one can say when the next will be. No standing corn or sheaf in shock was seen with us in November from 1816 to 1860, and from no pulpit of ours were prayers issued for rain in the midst of the hay harvest since 1826: therefore, to draw a single rule or inference from the state of the weather at these periods, with any reasonable hope of being of the smallest use for future guidance in gardening or farming, and many other things, is simply an oversight of zeal. No: they may draw out their rules as straight as the parallels, but as long as their rules are founded on exceptional events, they are likely to do more harm than good in most instances.

Did you ever think of this side of the subject when you have been reading of the value of knowing that such and such kinds of plants did so and much more, so much better, this very cold, very wet, and very exceptional season, than others of the same kind? Well, whether you had given it a thought or not, allow me to tell what I have thought on the subject—and that is, that all the value of the experience that has been gained this year in all the flower gardens of the three kingdoms, as far as it related to the effect of the weather, is not worth the value of a straw; and not only so, but that adherence to any rules which may have been laid down on the subject may do some mischief next year, and every year of our lives, till there is such another season as that which we have just got through.

Another proceeding in public writing which has a most mischievous effect in private practice, without the writers being at all aware of it, comes from the side of the so-called scientific writers, while no science at all is found in their deductions—it is this drawing up inferences from exceptional laws to the prejudice of the most careful, most learned, and most conscientious among professed gardeners. You have to cultivate a soil which will not grow some kinds of Strawberries, as some soils are well ascertained in practice not to do. I was the last gardener myself who could grow the Downton Strawberry, and I was most completely defeated in the very last Strawberry I attempted to grow—the British Queen, at Shrubland Park, which no mortal can do there till the whole nature of the soil is altered; for the last question put to me by my late lamented employer, was to ask if I could point out any means by which that kind of Strawberry could be successfully grown at Shrubland Park, “for it is such a good one to bear carriage.” I only mention this, which happened recently, in order to explain my meaning of a serious evil that is done to gardeners, without giving it a thought by the authors of it.

Suppose that question had been put to one of these same authors, and the chances would be that a whole establishment would be set by the ears through the scientific strain of the answers, which were founded on inconclusive evidence, and on the avowed presumption of the ignorance of Mr. Taylor, the gardener at Shrubland Park, who is well known to be one of the best practical gardeners in England.

Why, Mr. So-and-So finds no difficulty in growing British Queens without a garden at all; but my Lord this or that must not only keep a gardener, but, to be in the fashion, he must have a gentleman gardener. It is high time, therefore, that we should give up this mode of ex-

plaining failures and apply a different rule. It is right and proper that we should dismiss all idea of fear, favour, or fellowship in arriving at the truth, as in the case of the Gazanias; but it is not well to impute ignorance or motives in the actors instead of facts, which should be tried in the balances of fair play and good-will to all concerned. And it is still more incumbent upon us, who are growing grey in the service of our calling, to set the better example to the rising generation, to argue and explain facts and failures on their own merits, and not on our own estimate of the acquirements of those who may be engaged on them. That there is sufficient ignorance among the so-called first-class gardeners to humble us is but too true; but the greatest ignorance of all, is the want of a proper knowledge of how little the best of us yet know of many of the things on which we are daily engaged; but delighting at railing against that ignorance, as some appear to do, will never assist the rest of us to arrive one step nearer the truths of Nature, nor shorten the distance that we are from them.

But there is one rule of thumb among old gardeners on the subject of our climate which is verified again this season. Exceptional though this season has been, it has fulfilled the use of thumb to the letter this autumn—and it is this: if you can secure your half-hardy bedding plants on the night of the 10th of October, or the night before, or the night after, or on those three nights inclusive, there will be nine chances to one that you and they shall be free from weather harm for the next six weeks, and that you may expect to see the Dahlias and the Chrysanthemums blooming together in the open air that season, and three to one in favour of the ensuing winter being neither very long nor very hard. Good news that, but just as true to the mark as any rule of thumb ever was in this part of the world.

But to help to clear up the dispute about Gazanias. No. 1, which was sent by “R. F.” to the Editors, which, by-the-by, I have not seen, cannot possibly be rigens. Its leaves have no resemblance to any kind of Grass I know—certainly not grassy, as we say. The leaves of rigens, which I have not handled for the last twenty-five years, are short, dumpy, pointed, and quite entire—say, about one-third the length and breadth of those of splendens. Looking at the flowers of splendens and pavonia only would lead one to the same conclusion as that arrived at by the Editors, and given at page 76: “We should have thought that G. pavonia more likely to be one of the parents.” That was also the opinion of Mr. Sydenham Edwards, then the proprietor of the “Botanical Register.” But looking at the thing with the eyes of a cross-breeder, it is hard to believe that a leaf like that of pavonia, which is a true pinnatifid one, of seven pairs of leaflets, and an odd one at the point, although it is twice the length of the leaf of rigens, should be the parent of a longer leaf in splendens, and that all but an entire leaf; but it may have been so, for we have very little reliable knowledge on the effect of crossed composite flowers, and I have been told, though I do not remember it, that the old leaves of rigens are partly pinnatifid.

Rigens was as familiar to me in my young days as my old gloves, the name was then and there as true as botany could make. Donn, from Lambert’s herbarium, used to make periodical visits to revise the old names and make new ones for the seedlings in that collection for one of the greatest patrons of natural history, and one of the best practical botanists of that time in all Scotland—the late Lady Gordon Cumming. I was aware of splendens as an unnamed cross in London as late as 1834 or 1835; but for three years—from 1836 to 1839—I tried every nursery within miles of London to pick it up for a unique collection under my care, as is well known to all the firms of that period, for I bought up every rare and curious thing I could see with each and every one of them; and although I am just as liable to errors as any other gardener, I am certain it would injure our cause and calling

if I were to give in, when I was sure of a point, merely to please my own friends and fellow-labourers. But no one need fear to beard me in my den if he uses fair argument. Might not one important point be arrived at by this discussion on *Gazania*? Might we not get them all once more into one group, and, knowing that a spontaneous cross exists already between some two of their number, could we not give them an orchard-house treatment safe and dry as that of a first-class conservatory, and free and airy as the open day, by which they might cross, and do away with our cross arguments about their sorts and lineage?

D. BEATON.

HEATING A GREENHOUSE BY A KITCHEN FIRE.

IN your number for the 9th ult., I find an answer to a correspondent, "W. P. H.," who wishes to heat his greenhouse over the kitchen by a boiler at the kitchen fire.

I remember once hearing an old Scotchman say, "The women are at the bottom of ev'ry disturbance." Now, although I do not quite agree with him, particularly about the word *every*, still I think our shoemaker friend would find those in the kitchen would be wanting a good fire for their cookery that would be very apt to make a "disturbance" among the plants in his greenhouse, and causing an extra heat at a time when he would not want it; and at other times when more heat was wanted, the kitchen fire would not be the most economical for an amateur who "only grows plants for pleasure and not profit."

Now, with all due deference for our esteemed friend Mr. Fish, who by-the-by has taken great pains to answer the query, I would certainly recommend a hot-water apparatus quite independent of the kitchen fire, although the kitchen chimney might be made use of.

If our amateur friend wishes, I will send a description of one I made a few years ago from drawings furnished me by a friend, the inventor, which I have regularly worked every spring to heat a two-light frame for forcing *Achimenes*, *Gloxinias*, &c., at a very small cost; or, should you deem it worth a place in your journal for the encouragement of brother amateurs, I will send you a sketch and description.—JAMES ALLEN.

[We have requested Mr. Allen to do as he obligingly offers.—EDS. C. G.]

WORK FOR THE AUTUMN.

THAT every season brings its accustomed duties is a maxim so well known as to require no comment here; but it sometimes happens that during a dull and spiritless period—like, for instance, the month of November, many things are liable to be neglected from no other motive than that "there is plenty of time, it is not necessary to do them now." The planting of trees and shrubs, or the making of alterations, cannot be too early brought to a close; and yet we are often inclined to delay these jobs under the plea that there is "plenty of time, and perhaps better weather is coming." The last excuse is certainly the more valid of the two, but it is of doubtful import. A better time to plant fruit and forest trees than November will not come until the same month returns again; it is therefore advisable to hasten this duty on as much as possible. There are other works, also, that it is necessary to forward at this season—the securing of vegetables already in use, and the forcing of others wanted in the dull winter months. The first of these will be dwelt on in the present paper, and the others will follow in due course.

RED BEET.—The uncertainty there is of this root possessing the requisite colour, so much prized in Beet, has led many growers to preserve a little seed of their own; and good kinds of Beet, having the local name of the raiser for the time being, are plentiful enough. This, as has been explained in these pages before, need not be sown earlier than the middle of May; and being thinned in time, it is likely a good crop will be the result. Now this root is far from being as hardy as the Parsnip: it must, therefore, not be subjected to the severe frosts of winter, otherwise it will suffer as much as some of the tenderer kinds of Turnips. At the same time it ought not to be taken up and stored away too early, otherwise it loses that crispness which is of so much consequence to it. Taking it up a little before

the severe frosts set in will usually preserve it, provided few or none of the fibres be injured by the removal. Neither must the top be cut off too close. Storing it away in some cool place in sand will also save it from withering, and it will keep a long time quite fresh in that condition. A few plants might be left in the ground merely for trial, but they must be covered up in some way during severe weather.

ENDIVE.—Hard weather is also fatal to this plant, but from another cause. Its leaves are only relished as a salad when in the blanched condition, which is only obtained at a great sacrifice to their hardihood: in other words, blanching is a disease, and when the plant is suffering from this, it cannot withstand the severities of our climate. It is, therefore, prudent to take up a quantity of the best Endive plants (that are blanched and ready for use) with balls of earth to each, and lay them somewhere under cover, and where they can be protected from severe frosts and heavy, continuous rain; at the same time other plants may be subjected to the blanching process, by either tying them up or by inverting a flower-pot, tile, saucer, or something that way upon them. From ten to fifteen days will suffice to blanch the White Curled Endive: the Batavian and its varieties, being more for spring work, will be described in due time.

CELERY.—The same remark, applicable to Endive, holds good with this. A good, well-blanched head of Celery is more susceptible to injuries from severe frosts than a more green and hardy description of plant; but Celery can often be covered up to a slight degree in the place where it is grown, but a small quantity may be taken up for present use and laid in sand. This is especially advisable to do when severe weather threatens; and it will be much more comfortable to get at, and will keep some time uninjured, if not in contact with anything too dry and warm. In the absence of sand, earth will do that is free from worms; but do not by any means leave Celery too long in plain water, as that robs it of its flavour, and it has a watery, insipid taste.

JERUSALEM ARTICHOKE.—These are hardy enough; but for the comfort of being at all times able to get at them, a few taken up and kept in sand or earth will be handy. The whole bulk might be taken up, if thought necessary, and stowed away in a cool place; but in general they remain in the ground until February. This, however, need not be so if the ground be wanted for anything else.

Besides the above, a few heads of *Broccoli* ought to be taken up and hung up in some cool place, to preserve such from frost as are fit for use. A quantity of *Lettuce* might also be stowed away in a frame for the same reason. And such things as *Scorzonera*, *Salsafy*, *Horseradish*, and other roots may be dug up in any quantity and housed for use in bad weather, taking the advantage of a fine day to get them up, as the after-comfort of handling such things when in the dry is a matter not to be lost sight of.—J. ROBSON.

GRAPES SHANKING—SLIGHT HEAT FOR AN ORCHARD-HOUSE.

I HAVE some Vines planted in a north border, they have all shanked off. The border, however, itself has been covered with tiles since the beginning of August, and, therefore, no wet could have reached it. Besides, it is made on the principle of a pit—admitting a dung lining within brick walls, the top covered with boards like a *Cucumber-pit*. The whole space underneath the border is hollow, with pigeon-holes to admit the heat. The border itself is not more than two feet deep, and rests on turf with stones on perforated brickwork. I wish to inquire whether all these precautions ought not to be sufficient to operate against the disadvantage of a north border with little or no sun, and whether Grapes might not be expected to thrive under this treatment of the roots, or whether a common border to the south would be better than this artificial border to the north?

Again: I would wish to inquire what would be the most economical way of heating an orchard-house, not to force, but to bring it on a little earlier, and ripen the wood? Whether a stove in the house with a smoke-flue running the length of it, would be enough? It is sixty feet long, but only eight feet six inches wide. The path is in the middle sunk below the beds. The height is about seven feet and a half.—A SUBSCRIBER.

[We would decidedly prefer the south side for the border. Are you sure you prevented the border getting very wet and cold with all the tile-covering and excellent drainage? Are you

sure that you did heat the border artificially this cold season? Because if you did, and kept the rains off, we do not think the Grapes ought to have been so bad. However, the south exposure is best. Two small Arnott's brick stoves, or two small iron ones, with a smoke-pipe in either case, would make such a house safe. Could you get deep enough easily, we would sink a furnace at one end, and take a six-inch flue along beneath your pathway. The top of the flue would form the top of the pathway.]

ORCHARD-HOUSES.

I HAVE read my friend Pearson's article on these structures, and feel that, as your readers may be misled in some trifling particulars, I ought to say a few words by way of correction. But first I must protest against his quoting in your columns the gossip in very common language of inexperienced gardeners.

First as to the assertion that a "wooden house" is only a "glazed shed." I can only invite any of your readers to look at my improved houses, with their sides partly glass and partly three-quarter-inch boards, and then judge if a house with brick walls for its sides has not equal, or, perhaps, stronger claims to be called a "glazed shed." One house in particular, which I think Mr. Pearson has not seen, has not a brick in it, and yet I have no hesitation in saying it is one of the lightest, best ventilated, and best built orchard-houses in existence. It is 100 feet long, 24 feet wide, and 12 feet high in the centre. The roof is supported by two rows of light one-and-a-half-inch iron pillars, fixed to a light iron bar let into the rafters, and kept together by light, iron, transverse rods. On each side is a row of fixed glass 18 inches deep; and under the glass on each side a ventilating shutter 18 inches deep on hinges. This house is remarkably well built, and yet cost under £140. There are no brick borders inside. The surface is quite flat, but divided into three borders—one on each side and one in the centre. The effect when these borders are filled with trees is perfectly delightful, and far superior to any orchard-house I have yet seen; and although not a brick has been used in it, except in fixing the iron pillars in the ground, it has no resemblance to a "glass-roofed shed."

There is not a word to say in objection to Mr. Pearson's twenty-foot span-roofed houses with brick walls: they are only more expensive and not so cheaply ventilated as houses with posts. Iron posts let into pieces of stone underground might be employed with excellent effects. The great end seems to me to be lightness with strength. John Bull is rather too fond of stability, which often seriously interferes with cost and utility. It should also be recollected that any hedge carpenter can put up a house with posts and a fixed roof; while to make swinging sashes a regular, good, and expensive workman must be employed.

Mr. Pearson forgets that a house 40 feet by 20 feet, costing £66, is often far beyond the means of the poor amateur, who can only afford £20, or even less, and who must be rejoiced to find that he can build a span-roofed house with posts, 14 feet wide, glazed on each side with the ventilating shutter under the glass for 10s. or 12s. per lineal foot. I have built a house of this description (and a charming house it is, in which I have grown all my large fruiting trees for three years), 100 feet long for £50; and I believe that any one buying their rafters and boards from the steam saw mills may do the same.

Silly people, who put up badly built, cold houses in cold districts, should suffer for their folly. I have in the "Orchard-house," in the last two or three editions, mentioned that lean-to houses with brick walls are to be preferred for most places, owing to the dry heat being stored up and given out slowly by the brick wall at the back. No one able to read would ever think of keeping bedding plants in an orchard-house.

Pears, as I know from the experience of several friends, can be grown in the greatest perfection in orchard-houses; but in the south they should be placed out of doors in July and August, to give them piquancy of flavour. In the north this, I should think, might also be effected by merely placing the trees in a warm exposure, or near a wall with a southern aspect. One of my friends asserts that this is not necessary, and that his Pears are always first-rate, yet kept under glass. He is, however, a clever, observant man, who attends to his trees with his own hands and mind. The latter, I fear, is a very rare occurrence among orchard-house cultivators.

Plums, I have reason to know, are a most desirable production of the orchard-house. I have rarely eaten *any fruit* to be com-

pared with some Transparent Gage Plums gathered from my trees in pots last September. Coe's Golden Drop Plums and other kinds of Green Gages were all of the highest excellence. This I imputed to the summer being wet and to their ripening slowly, which has much more to do with the flavour of fruit than we are aware of, and about which a chapter might be written. It was a knowledge of this that from the first prompted me to recommend orchard-house Plums to be placed in the open air to ripen their fruit.

Mr. Pearson's cultural directions are all good. He errs, however, in his caution about ramming down the soil. If the loam is turfy and inclined to be light, the compost cannot be rammed in too firmly. Fumigation while the trees are in bloom and infested with aphides is better than touching them with a brush. A frost severe enough to penetrate a fourteen-foot span-roofed house when the trees are in bloom is rare. An iron pan made in the form a dripping-pan, with four or five small holes in the centre for the draught, and filled with six or eight quarts of charcoal, will burn from 9 P.M. to 6 A.M., or thereabouts, and keep out frost-mischief most efficiently. In some seasons this is never required; in others not more on the average than twice—so transient are these late spring frosts.

We are at present quite ignorant of what a Peach tree in a pot can do. Twenty-five fruit are *not* enough for any tree in a pot. We shall in a very few years have trees in twenty or twenty-four-inch pots, with stems as big as one's arm, and capable of bearing from seven to ten dozen. And why not?

Roots growing through do not stop the drainage holes, as stated by Mr. Pearson. My old trees have been ten years in the same pots, the holes are as open as ever, and the trees in perfect health. Strong manure water is a dangerous fluid, and has been the death of thousands of trees. It is better practice to place some strong manurial matter on the surface, and allow it to go to the roots in Nature's way—by gentle subsidence.

I have written this article merely to correct, to a small extent, some little fallacies of my friend Pearson, who is, like myself, quite inclined to "go a-head."—T. R.

EARTHENWARE PIPES INSTEAD OF IRON PIPES FOR HOT-WATER HEATING.

I HAVE laid down about 600 feet of glazed earthenware piping for hot water, and am laying down more instead of iron piping, and am very well satisfied with its performance. The cost is fully two-thirds less than iron, and more easily fixed, which are both very great considerations for amateurs. A small boiler and glazed earthenware pipes would, I am quite sure, cost very little more than flues, and would, in my estimation, be far more acceptable to hundreds of amateurs than flues. I am but an amateur myself, and speak from experience.

If you think there is anything new in it, or the particulars would be acceptable to your numerous readers and correspondents, I shall be very happy to furnish them.—G. DIAMONT, *The Lodge, Flinton, near Manchester*. [Pray do.—Eds. C. G.]

FORCING.

IN writing a few simple essays on this subject, it is necessary, first of all, to give a clear idea of what is meant by the term. It is often used as nearly synonymous with "accelerating" vegetable growth. We shall confine this latter word to the forwarding to perfection at an earlier period than usual of vegetables, fruit, and flowers by means of walls, fences, and other protection from cold; full exposure to the sun on south borders and south sloping banks; and the extra assistance that can be given to them in such cases by hand-lights, glass frames, glass-covered pits, and glass-covered walls, or houses covered with glass, the acceleration depending entirely on shelter and the stored-up accumulated heat from the sun's rays. By varying these means we can prolong the season of garden produce, by retarding them in growth or ripening.

On the other hand, we shall confine the term "forcing" to cases where, over and above, any or all these means being brought into operation, there shall also be the addition of artificial heat; whether that heat be procured by fermenting, decomposing, animal, or vegetable matter, or from the combustion of any kind of fuel, heating a furnace, a flue, or a hot-water apparatus. Considered in this aspect, Cucumbers

grown in the open ground, with a hand-light or large glass over them when planted, would be accelerated; grown in a frame or pit above a bed of sweet, fermenting dung, &c., they would be forced. A Vine or a Peach tree, growing in a house roofed with glass, and no heat applied except what the sun gives, would be accelerated or retarded. A similar house, with a hot-air flue or hot-water pipes running through it, would be a forcing-house.

FERMENTING MATERIAL.

For forcing this is generally the most easily accessible to the possessors of small gardens, and with that the first attempts are generally made to steal an advance on our natural climate. Everything of a vegetable or animal matter that, when thrown into a heap, will produce heat during the process of decomposition, is valuable for this purpose. The great thing, and especially when the material is not superabundant, is to use that heat so as to be healthy to vegetation, and with as little waste as may be of the material furnishing the heat. The whole process would be simplified did we look on such a fermenting heap just as we would do on a pile of fuel from the combustion of which we want a certain amount of regular, continuous warmth. In both cases air, or its oxygen, is necessary to the slow combustion of the fuel and the continued decomposition of the fermenting heap. Shut out air, and the heat will languish and expire. Give too much air to the furnace, and the fire will speedily be burnt out. Give too much air to the fermenting heap, and heat will be arrested, because decomposition will be stayed. The necessity of a certain amount of moisture to insure decomposition of fermenting matter is the chief difference between the two cases, though even some sorts of fuel burn best when wet after the fire has fairly been set a-going. So long as the fermenting material is kept dry, it decomposes too slowly to produce available heat. If thoroughly soaked the result is the same—it becomes so far shut out from air. A load of Wheat straw in a good barn might lie there for years. Placed in small bundles under water it would gradually rot, but the heat given off would be trifling. Untie the bundles and pile all in a regular heap, wetting the straw regularly as you proceed, and you will soon have a warm heap of decomposing material. Add horse-droppings, short grass, &c., or other matters possessing a fair supply of nitrogen, and the heating process will be effected all the sooner, but you will have to wait longer before it is sweetened. The decomposing process also will be slow or quick, according as the air is dry and cold, or moist and warm. Other circumstances being equal, bodies having the greatest amount of nitrogen will yield the most heat when decomposing, but the heat is not so regular and lasting as from bodies consisting chiefly of carbonaceous matter; and besides, you must wait longer before they are sweetened, and the steams and gases noxious to vegetation, such as sulphuretted hydrogen, are given off. Such violent-heating bodies, besides, are apt to become too close, and the air is prevented entering to keep up a slow decomposition: and therefore, when nothing else can be got, the prunings of hedges, faggots of twigs, and even stems of Dahlias and Hollyhocks, are useful when put in in layers to prevent that extra closeness.

HORSE-DUNG.—The most generally come-at-able fermenting material is *stable manure*, &c. When brought from the stable dunghill it should, when wanted for forcing, be thrown into a heap, the droppings and the straw thoroughly mixed, and what is dry of the latter watered from the rose of a watering-pot, and the whole beat with the fork, or slightly trod, to prevent the heap being too loose and airy. If the weather is at all mild it will heat gently, and will want turning in about eight days, placing the centre of the heap to the outside, and the outside to the centre, the top to the bottom, and the bottom to the top, and just sprinkling again all parts that seem dry and white-caked in appearance. In a similar time it may require another turning with the same precautions, and in some cases a fourth, before using for anything tender. The time will much depend on the weather. In these turnings, and also when the heap is thrown up at first, a sprinkling of long litter four or six inches thick will cause the heap to ferment more regularly; and at every turning the litter should be laid aside, ready for use all over the heap again. In turning, the whole mass should be well shaken with the fork, so as to mix thoroughly; and as, from the watering, the mass will be heavier and closer, no beating will be required. After the last turning the heap must remain until the heated vapours escaping from it are found to be sweet instead of noxious. A piece of sheet iron, or slate, or a piece of glass suspended above the heap, will furnish you with a good test. If the drops of

moisture condensed on the lower side next the heap have a dirty yellow appearance, the dung is yet too rank, too much of noxious gas is produced, to trust any growing tender plant in it; if the drops are clear and bright as the dew, you may consider your dung sweet enough for anything. Even after making such dung into a bed for a frame or a pit, it is well to watch these symptoms before trusting plants in it. With such material we should consider a bed made from 12 inches to 18 inches deep, a *slight* hotbed; if from 15 inches to 24 inches, a *mild* hotbed; and if from 24 inches to 40 inches and more, a *regular* hotbed, fit for tropical plants, &c.

Such a mode of preparing dung for a hotbed will hardly fail to give satisfaction, unless from two causes—the first, the liability of the bed to become too close, and thus arrest the process of decomposition, which can be averted by twig faggots, &c., as already referred to. The other cause is the next to impossibility in small places—say with a horse and cow, to get a sufficiency of dung thus nicely sweetened to make a bed for early Cucumbers and Melons,—say three or four lights in length, or from 12 feet to 16 feet long by 6 feet or 7 feet in width. In such a case proceed as follows:—A month or five weeks before you intend building your bed collect the most of your dung, and throw it into a heap and treat it exactly as described above. A fortnight after get another heap collected, and give that one turning; ten days after that get another heap, and have that ready for the first turning. Then, when the first heap is sweet, place the third heap for the bottom of your bed, shaking it nicely and regularly, and beating it down with the back of the fork. On this place the second heap, and shake, mingle, and beat still more carefully; and, last of all, place the first-made sweet heap on the top. Any noxious steam, rising from the lower layers, will be absorbed and sweetened in its progress through the upper layer into the atmosphere of the house and bed. From a scarcity of material I have often adopted this plan, and generally with as much success as when all the dung was thoroughly sweetened.

LEAVES OF TREES, collected in autumn and winter, are most useful fermenting substances. Raked up along with sweepings of grass, &c., and thrown into a heap, they will generally be sweet enough in a fortnight. Raked up by themselves and placed dampish in a heap, they may be used in a week if the weather is mild. If collected dry, and kept in a dry shed, they will keep for a twelvemonth or more without heating much, and when wanted for heating have only to be moistened. From such leaves alone I never met with a heat noxious to vegetation. When used alone they do well for slight and mild hotbeds. To give not only lasting but greater heat, fermenting dung as prepared above should be added. If the leaves are raked up very wet, they may be mixed at once with the dung, and if the latter is dryish it will save watering. When the leaves are rather dry I prefer adding them from half in quantity or more at the last turning, so as not unnecessarily to waste the leaves before transferring them to the beds. According to the proportion of leave with the dung, the bed should be all that deeper than mentioned in a preceding paragraph. Were I satisfied with a three-foot dungbed for Cucumbers in March, I should like from six to twelve inches more, if the heap was nearly half leaves; earlier in the season I should increase the depth. When leaves were plentiful, and dung scarce, I should just work the dung little more than recommended for the second sweetened heap, and place fifteen inches of hot tree leaves over all. All deciduous leaves are useful, and so are evergreens, so far as giving heat is concerned. I prefer, however, Oak as first, and Beech as second. The former I have dug out pretty fresh and warm from the bottom of a deep Pine-pit after they had been there nearly three years. When used dryish a great body of air is enclosed with them, which thus insures a slow, gradual decomposition, and a long, gentle heat as a consequence. All such deciduous leaves when thoroughly, or rather more than half, decayed are invaluable for the pot gardener, and for producing the sweetest vegetables. Keep in mind that the drier they are housed and kept the longer will they be a storehouse of heating to which you may resort. If collected wet and damp, whether you want the heat or not then, they will be sure to ferment.

THE SPENT TAN from a tanner's yard is a valuable substance for yielding a sweet heat. The fresher and the drier it is obtained the better. If when driven home the water keeps running out of it all the way it will want to be spread out, and dried for several days. If when brought home it is merely moist, not splashing wet, it may be thrown into a heap at

once, and generally in ten or fourteen days it will be heated, and fit to take to the place where you want it. Everything seems to like the smell that comes from it. Used alone when thus fermenting, a less height than of good sweet dung will do. When mixed the same proportion may be taken. When used together, however, I should prefer the tan to be on the top by itself. It is thus very often used in combination with tree leaves, and especially when the plants are grown in pots, and set upon or plunged in the tan. Except when hot water is used for bottom heat, no better plan could be adopted than three or four feet of good Oak leaves, and a foot or eighteen inches of tan above them. When tan is used by itself, and when without linings, it is necessary to renew the heat. Instead of mixing the old and new tan together, it is best to put the new by itself, either at top or bottom as may be deemed best under the circumstances. When mixed, the heat is apt to be too violent and to be prematurely exhausted. When thoroughly decayed and sweetened by exposure to air, I have used it mixed with soil for early Potatoes, Beans, Peas, &c., in pots; but for such purposes I do not consider it at all equal to the mould from decayed leaves. Mixed with quicklime to remove its astringency, it becomes a fair dressing for grass land. R. FISH.

(To be continued.)

HORTICULTURAL SOCIETY.

FLORAL COMMITTEE.

At the Meeting held on November 8th the following subjects received special awards:—*Celosia aurea*, exhibited by Mr. Turner, of Slough. This was a large, well-grown, bushy plant of an old annual of great beauty, but little known. The numerous branches were terminated by pyramidal heads of golden-yellow plumes, which have a very rich and pleasing appearance. The plant received a Special Certificate as a well-grown specimen. *Statice profusa*, from Messrs. Parke & Williams. This is a hybrid raised between *S. Holfordi* and *S. puberula*, and is of suffrutescent habit. It is remarkable for its property of abundant and continuous flowering. The plant exhibited, it was stated, had not been out of flower for fifteen months, and was still loaded with panicles. This was Commended.

Chrysanthemum Lady Harding, a large, incurved, pale rose-coloured seedling, exhibited by Mr. Salter, was awarded a First-class Certificate. *Chrysanthemum Little Harry*, from the same raiser, was Commended on account of its free-flowering dwarf habit. It is one of the large-flowered section, the flowers rather flat, shaded orange-yellow.

Mr. Rivers exhibited a plant of *Taxus baccata erecta*—the variety which is grown on the Continent, and which appeared to be the same as the Yew exhibited at a previous Meeting by Mr. Crowder. It was determined to invite the two kinds for comparison, the opinion of the Committee being deferred till this had been done. Some very pretty hybrid *Gesneras* raised between *cinnabarina* and *picta* were shown by Mr. Bousie, gardener to Lord Taunton; but, though handsome plants, they were not considered an acquisition by the side of their parents. Mr. Veitch showed a branched *Celosia*-like plant under the name of *Amaranthus*. This had been raised from imported seeds, and resembled a tall branching-habited Cockscomb, with a tendency to spicate and feathery inflorescence. A fine group of the handsome *Skimmia japonica* came from Mr. Noble, of Bagshot; and a very ornamental species of *Cotoneaster*, called *Symondsii*, of upright shrubby habit, with Box-like oval leaves, and bright orange-scarlet berries—a plant very little known, but deserving of extensive cultivation, was brought for inspection by Mr. Standish, of Bagshot. Several New Zealand Ferns were contributed by Messrs. Lee, of Hammersmith.

CULTURE OF THE FLUKE AND OTHER POTATOES.

I FIND "THE DOCTOR'S BOY" has some remarks on the Fluke Potato. I have grown this for some years, and from practical experience can testify that it will not do in light, sandy soil, for the same reasons as set forth by that correspondent. In deep, rich soil it is the best variety, taking all points into consideration, that I have ever grown; but when grown in this soil there are generally many bad tubers. I have found, however, that this may in a great measure be averted by lifting the tubers

before they are ripe, and spreading them thinly on a floor carefully to dry before storing away.

The cultivation of the Potato requires very minute calculation, as almost every sort requires different management; and if attention is not paid to the habit of the sort success is not so certain.

Some few sorts crop best in light, sandy land; while others like deep, rich soil on a dry bottom; but, as respects the quality of the Potato, I think all are the best on light land if they do not grow again. This year has been a most remarkable year in Potato culture. This plant has felt the want of sun, and the cheering influence of a warm bed to grow in as much as any other plant I know. I will give you one instance of this.

I have had about an acre this year, laid out in plots about fifty yards in length and fourteen wide, east and west. They were planted crosswise, and, consequently, the rows ranged north and south. We planted them three feet apart between the rows, and ten inches from set to set; and though this was not a niggardly width, yet it was quite astonishing to see the difference even in roots adjoining each other, for the end roots at the south end of the rows yielded a produce double that of the others. This I attribute to the influence of the sun's rays at that end of the rows.

I also think that change of seed not only from one sort of soil to another, but from one country to another, has much to do with success in Potato culture; for this year I have planted many sorts, but all sorts are blighted more or less, with the exception of two sorts which I had out of Scotland; and, strange as it may appear, I have not one blighted tuber in them. This I attribute to change of atmospheric air and change of soil. They yielded also a good crop.

Our land lies on the top of a hill east of the river Derwent, very exposed and in various aspects. The two sorts named above were planted in a western aspect, bounded on the north by Farmers' Profit, a moderate lot; and on the east by Bluchers, which were very bad; and on the south by Hamburgs or Rough Reds, a very good lot.

Our Flukes were planted on a northern aspect in deep, rich soil—in fact, it was a piece of grass which had not been under tillage for forty years. The crop was abundant. In conclusion, I would add, all those who would grow Fluke Potatoes must set them neither early nor late, plant in deep, rich soil, on a dry bottom, and from the moment they are above ground must keep on a vigorous growth of the plants till the tubers have attained their full size and a little matured; then up with them and follow the directions given above. I will vouch for a good result.—S. B., *Belper*.

FALL OF RAIN NEAR DARLINGTON.

THE following comparison of rainfall for the past ten months of 1860, and the same months of the preceding year, 1859, may be of interest to you.

| 1859. | 100th part of inch. | 1860. | 100th part of inch. |
|--|---------------------|---|---------------------|
| January..... | 0.66 | January..... | 2.55 |
| February..... | 0.99 | February..... | 1.99 |
| March..... | 2.40 | March..... | 2.39 |
| April..... | 1.98 | April..... | 0.77 |
| May..... | 0.30 | May..... | 4.25 |
| June..... | 2.81 | June..... | 2.82 |
| July..... | 4.44 | July..... | 3.76 |
| August..... | 1.91 | August..... | 3.61 |
| September..... | 2.25 | September..... | 1.19 |
| October..... | 2.50 | October..... | 2.00 |
| Greatest fall on any one day, July 19th, 1859—3.42. | | Greatest fall on any one day, May 28th, 1860—2.07. | |

| 1859. | July, rain fell on..... | 6 days. | 1860. | July, rain fell on..... | 11 days. |
|----------------|-------------------------|---------|----------------|-------------------------|----------|
| August..... | 4 | " | August..... | 19 | " |
| September..... | 8 | " | September..... | 11 | " |
| October..... | 5 | " | October..... | 15 | " |

—JOHN RICHARDSON, *Southend Gardens, near Darlington*.

VACCINATING THE VINE.

At the request of a "DORSET SUBSCRIBER" we insert the following extract from the *Times*, and, in answer to the inquiry which he appends, have no hesitation in saying that we think it is a fallacy.

"Colonel de Golberg, of the 38th Regiment of Infantry, has addressed the following letter to the Prefect of the Gironde,

explaining the method he has discovered to preserve Vines from the oïdium by vaccination:—

“I had the honour, three months since, to receive a visit from several members of the Agricultural Society of the department of the Gironde, who wished to ascertain from me my method of vaccinating the Vine. At this moment the sap of the Vine is beginning to cease. I have chosen this period to explain the result of the incisions in which I had placed one or two seeds of the diseased Grape. I vaccinated ten Vine-stocks within a period of a month; the four which were vaccinated at the commencement of the malady produced remarkable results, and I wish to explain these results to the members of the Agricultural Society who honoured me with a visit. The following are the results:—The four stocks first vaccinated completely cured the Grapes which they bore, and a clammy matter was formed in the interior of the incisions; the others subsequently vaccinated have produced less successful results, a small quantity only of clammy matter having been produced, which leads me to believe that the vaccination should be performed as soon as the disease appears. One stock which was not vaccinated lost every one of its Grapes. Another stock did not produce any clammy matter in the incision, and a portion of the Grapes rotted. —DE GOLBERG.”

STOVE ORCHIDS.

(Continued from page 61.)

UTENSILS.—I have described the kind of pots that in general I used for Orchids, but sometimes I found it necessary to procure wide, shallow pans for such plants as *Miltonia spectabilis* and some others. In deep pots I found the leaves and pseudo-bulbs turned yellow, especially if too much exposed to the sun. I also found pots with holes at the sides very useful for many of the Indian Orchids—such, for instance, as the *Ærides*, *Saccolabiums* and *Vandas*.

Syringe.—Read's or Warner's, either of these is good. There should be three roses—one with very fine holes, one with medium sized, and one with wider holes. The first is useful to form a gentle shower—like dew, the second for general use, and the coarse one to force a heavy shower on the soils in baskets, and to wash off insects, previously lying the plants on one side. All these the amateur will find highly useful.

Watering-pots.—A large one to carry water and a small one with a long spout for watering plants at a distance.

Lastly, a convenient *potting-bench* of a good size, with a narrow board at the back and ends, placed in a warmed shed or potting-room, handy to the Orchid-house, and if possible with a door opening into the house, so that the plants when removed to be potted will not be exposed to a sudden change of temperature, will complete the list of necessary apparatus for the Orchid-grower.

SOILS.—The soils necessary to grow Orchids with consist of turfy peat, fibry loam, sphagnum moss, leaf mould, cowdung pressed in cakes, charcoal, silver sand, and for drainage a large supply of crocks—that is, broken pots in at least three sizes.

Turfy Peat.—The best of all comes from the neighbourhood of Exeter, but very good may be obtained in various parts of the kingdom. It must be sought for where dwarf shrubs, grass and Ferns grow on it—the roots of these form the most useful part of it. It should be carted home and laid on a heap. When the potting season approaches a sufficient quantity for present use should be brought into the potting-shed; and when nearly dry should be chopped into pieces, and then the pieces pulled asunder with the hand. After that, pass it through a fine sieve to take out the finer particles; and what remains in the sieve is the part to be used for the Orchids. The finer parts may be used for young *Azaleas* or *Heaths*, or to mix with loam and sand for any young plants.

Fibry Loam will be needed for terrestrial Orchids. It will only require to be chopped into small pieces and used in that state. The surface of an old pasture taken off an inch or two thick forms the very best loam for this purpose. Like the peat, it should be brought into the shed to become dry and aired some time previous to being used.

Sphagnum Moss.—This is found in wet, boggy marshes, in some places very abundantly. It is collected with a long-toothed rake in dry weather, and laid up in a dry shed till wanted. In order to make it work easily and mix readily with the peat, it should be chopped pretty fine with a sharp, small hatchet, taking the dust out of it through a fine sieve: it is then ready for use.

Leaf Mould.—This, as is well known, is formed with the leaves that fall in the autumn. It forms a large part of the compost for terrestrial species, such as *Bletias*, *Ancetochiluses*, *Cypripediums*, &c., and should not be too much decayed. Oak and Beech yield the best leaves for this purpose.

Cowdung.—I prefer this article best when it is collected partially dried out of the cow-pasture. It should be laid on a floor rather thin, and patted down with the back of a spade, and lie long enough to become dry, and then be gathered up and put in a dry place till wanted.

Charcoal is a very useful ingredient to mix with the peat, loam, and moss, and also to lie upon the crocks used for drainage. It should be broken into pieces the size of a hen's egg or walnut, and be kept dry till required for use. A small quantity of silver sand should also be procured, it is used for some species.

Drainage.—For this purpose there is nothing better than broken garden pots. On breaking, separate them into three sizes, the largest to cover the hole at the bottom of the pot, and a thin layer upon them; then a second size, rather less, to lay upon the larger size; the third size should be not much larger than horse Beans. The greater part of a collection of Orchids grown in pots requires to be well drained—so much so, that the pot should be half filled with it. Stagnant water will certainly destroy the roots: therefore the cultivator must pay particular attention to this important point.

CULTURE.—The grower of these interesting and singularly beautiful plants having put up the house for them properly heated, the shading and arranging parts of the interior completed, utensils and soils in order, and a fair collection of plants procured, will then commence cultural operations, the most important of which is

POTTING.—The best season for potting will generally be in the early months of the year. The rule to know when a plant should be potted is whenever the buds at the base of the pseudo-bulbs begin to grow;—then the plant should be potted. Now, if too much heat has been given during the autumn, these buds may be prematurely started; but if the resting season has been properly managed, and moderate heat given during that season, no growth will take place till the turn of the year. Such being the case, then at the proper time remove such plants as have begun to grow into the potting-shed. Take a plant in hand, turn it out of the pot very carefully, taking great care not to break or bruise the roots. Very likely some roots will be found adhering to the sides of the pots so closely that they will not leave them without breaking. In such a case I used to thrust a thin-bladed knife, such as painters use to work their colours on the palette, down between the roots so fixed and the pots. With care and dexterity this may be done without injuring the roots. I have met with some bad cases where the roots were numerous and too firmly fixed to the pots to be got off with the knife. In such instances I have broken the pot very gently, removing as much of it as I could, and leaving the rest with the roots fastened to the pieces as I found them. Having by these means got the plant clear of the pot, then shake off all the old compost and examine the roots—all that are dead cut clean away to the living parts. Then, whilst the plant is in hand, look out for and clean away all insects, such as brown and white scale, black thrips, &c. If the white scale (the worst of all) abounds, wash the plant with strong soap water or Gishurst Compound, and cleanse the leaves also of any dirt or dust that may be on them. This washing being done, lay the plant down—the leaves will be drying whilst the pot for it is prepared. Let it be of a size in proportion to the size of the plant. Orchids, however, require larger pots than most other plants, because they have mostly larger and longer roots. The fresh pot should be quite clean inside and out. Begin to drain it by laying a large piece of broken pot over the hole or holes (for large pots should have three holes), prop this crock up with a small piece on one side, place other large pieces upon this central one, then the next size, and, lastly, the small-sized potsherds. Upon them place a thin layer of pieces of charcoal, and then put in sufficient of the right kind of compost to raise the plant a little above the rim of the pot. Small plants may be raised one inch, middling-sized two inches, and large ones from three to four inches. Each plant should stand as if on a little hillock in the centre of the pot. Make the compost firm, working it in amongst the roots. Then, if the plant does not stand firm of itself, thrust in some sticks and tie the pseudo-bulbs to them in a neat and tidy manner; set the plant down on the floor, and take the syringe with the coarsest rose on it, fill it with milkwarm water, and, holding it very near

to the compost in the pot, force the water out all over it, being careful not to wet the plant. This settles the compost, giving it a neat, even appearance, and finishes the operation. Carry the plant into the house and take the next plant in hand, repot it in a similar way, and so proceed till all are potted that require it at that time. The above directions refer to the epiphytal species. Terrestrial species require a somewhat different mode.

T. APPLEBY.

(To be continued.)

SHAW'S TROPÆOLUM BRILLIANT.

HAVING often benefited by hints given by your various correspondents, I venture to send one as my turn—and that is how to obtain at a trifling cost one of the handsomest baskets of bloom I ever saw.

Having a few plants over at bedding-out time of "Shaw's Tropæolum Brilliant," I placed three small plants (6d. each), in a large wire-work basket two feet across and about twelve inches deep, lining it with forest moss, and filling up with good potting soil. It was then placed close to the glass in the fernery, and the shoots as they grew tied down to the sides of the basket. On showing bloom it was put in the conservatory, where it has been one mass of bloom the last six weeks, and, judging from appearances, will continue so all winter, as fresh flower-buds appear daily. They look and last well in a bouquet.

Mr. Shaw was much pleased and a trifle astonished when he saw the basket. He is not aware of my sending you this description; but I feel quite sure any one who tries it once will do so again.

I may say here, that larger plants trained up the wall bloomed and are blooming well at the extremities; but, like all other Tropæolums, the stem looks bare. This is avoided by the basket culture, as the long shoots are entwined below the basket, so that altogether it makes a very graceful object at a very small expense.—R. T.

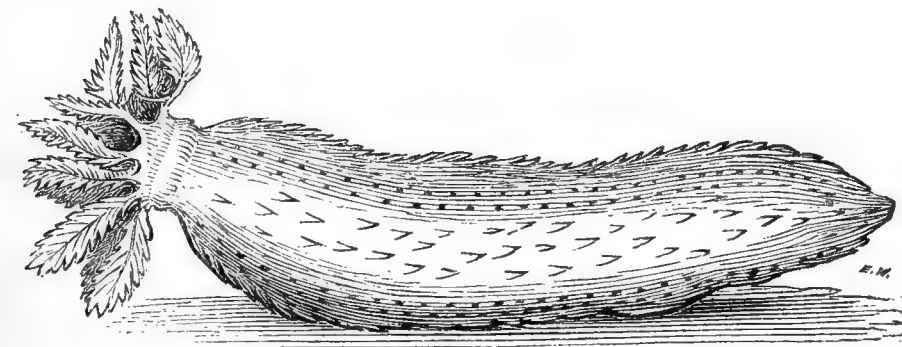
WHAT TO LOOK FOR ON THE SEASHORE.

(Continued from page 65.)

ECHINODERMATA (Continued.)

PENTACTE.

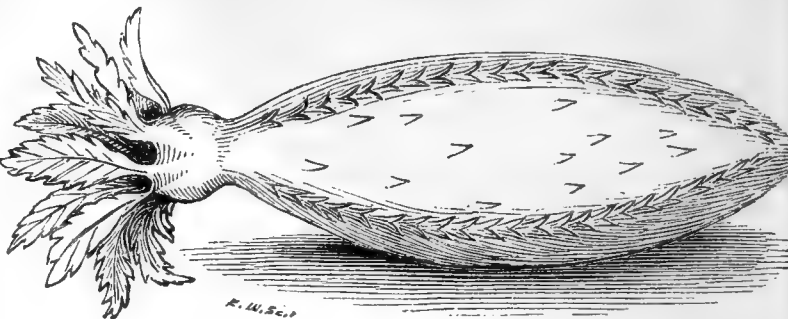
THE COMMON SEA CUCUMBER (*Cucumaria vulgaris*).—



This animal is of a Cucumber-shape, and attains a size of from four to eight inches in length. Its body is five-sided, having suckers on all the angles, but none on the sides. Its tentacles are ten in number, plumose-stalked, rather large, and of a deep red colour. The body-colour of the Scotch and Irish specimens differs; that of the former being yellow, of the latter, purple; in other respects there is no variation. The muscular system of the common Sea Cucumber is highly developed. Great numbers are very frequently thrown ashore after a storm on the east coast of Fifeshire. And it would seem to be, as its name implies, the commonest of the species. On the Irish coast it has been dredged in the north, and again in the south, at Youghal. It has been frequently discovered in the stomach of the cod.

THE GREAT SEA CUCUMBER (*Cucumaria frondosa*). — It is the largest of all known European species, measuring fully a foot in length, and capable of extending itself to the size of three. The creature has, in common with all its tribe, the power of changing its shape at will; now blowing itself with water into a perfect ball, now contracting the middle of its body like an hour-glass,

and presently elongating itself like a worm. The body of the Great Sea Cucumber is of an ovate form, and somewhat pent-angular. On the angles are five alternate rows of suckers



arranged in duplicates. The body is almost smooth, and is of a very dark purple on one side, whilst on the other it is whitish; on the darker side are distributed a few suckers. The tentacula are ten in number, large and branching, the branches beautifully feathered, and of a dark brown colour, spotted occasionally with white. These creatures are the most plentiful in the Shetland Seas, where they have received the name of "Sea Puddings."

THE ANGULAR SEA CUCUMBER (*Cucumaria pentactes*).—



This is of a long cylinder shape, extremely angular, with double ranges of powerful suckers on each of its angles. The skin is perfectly smooth and very tough. It has ten tentacles more or less feathered, and is subject to great variety in its colour. Although its prevailing hue is deep purple, it is occasionally of a purplish-white, and sometimes white altogether. The tentacles also vary in colour from a purple to a white. Its length is from two to four inches. This creature can also change its form at pleasure, and will at times so contract its body as to become quite hard to the touch. The Angular Sea Cucumber has been dredged at Weymouth, and on the coast of Devonshire. There are also several varieties found in the Frith of Clyde.—W.

(To be continued.)

THE CURATE'S VINERY IMPROVED.

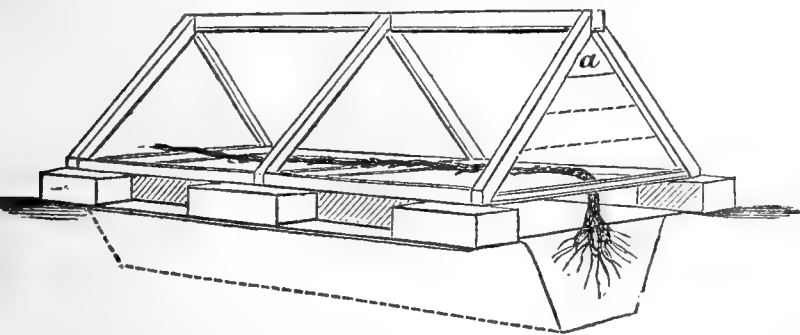
IN the eighth edition of Mr. Rivers' little volume, "The Miniature Fruit Garden," occurs the following description of what he terms "The Curate's Vinery":—

"The annexed figure will convey a correct idea of its shape and make. To form a vinery of this description, some dry place in the garden must be selected; if not naturally so, it must be

well drained. A dry, gravelly, or sandy border, gently sloping to the south or south-west, will be found a favourable site; a flat surface will, however, do well if fully exposed to the sun.

"When the site is determined on, a trench should be dug 2 feet wide on the surface and 15 inches deep, sloping on each side to the bottom, which should be 6 inches wide; the bottom must be paved with tiles, placed lengthwise, and the sides lined with the slates called duchesses, also placed lengthwise.

"On each side of this trench, on the surface of the soil, a row of bricks must be placed 2 inches apart, end to end, leaving spaces between each brick 2 inches wide—these are for ventilation. On these two rows of bricks the roof is to be placed, which would be a ridge of the following dimensions:—2 feet 6 inches wide at bottom, and 15 inches deep from the centre to the apex. It should be made in lengths of 7 feet, two of which, placed end to end, form one vinery 14 feet long. Each length should be glazed with four pieces of glass; and as each sloping side of the ridge is 20 inches deep, four pieces of glass about 20 inches square for each side will be required. The two outer ends must be closed with board: at one end a notch should be cut in the board to admit the stem of the Vine, which should be planted outside, so that its stem is on a level with the surface of the soil outside; the soil the Vine is planted in should be well stirred, 2 feet deep, over a space 6 feet square, and enriched with rotten manure, and what are called one-inch bones or 'bone dust.' The Vine, when planted, should be introduced and suffered to grow as in a common vinery till it reaches the end. Pruning on the spur system is the only method to be followed. To support the Vine in the centre, pieces of slight iron rod should be placed across the furrow, 2 feet apart, resting on the surface outside; to these the stem of the Vine should be fastened, so as to be under the centre of the roof. The bunches of Grapes will thus hang in the centre of the furrow, and, owing to the radiation of heat from the slates and tiles, they will ripen well. I need scarcely mention that in pruning, either in winter or summer, the two lengths of ridge forming the roof must be taken off and replaced when the operation is finished. Owing to the moisture from the soil, red spider but rarely makes its appearance; but it will be a sure preventive if flowers of sulphur are kept thickly sprinkled on the slates and tiles during the months of June and July. It is not only for Vines that these strictly-called ridge-and-furrow vineries are adapted—Pears on the Quince stock, and Peaches and Nectarines, all cultivated as closely-pruned pyramids, may be grown in them; the latter would require to be lifted annually



in November, to keep down excessive vigour. A seven-foot length closed at one end, should be appropriated to one tree, the open end towards the root.

"Their cost for carpentry, as given by my village builder, is 6s. 6d. for each seven-foot length; glass, about 4s. So that a vinery for one Vine will cost, including slates and bricks, about 25s.

"There are several garden purposes to which these simple structures may be applied. I fill my trench half full of rich mould early in November, and plant in it Endive and Cabbage Lettuces for winter and early spring salads.

"In gardens where these glazed ridge-roofs are not wanted for Vines or fruit-tree culture, they will be found most useful. They may be placed on any warm border on the surface of the soil, and early Peas, French Beans, and many other early vegetables requiring protection from spring frosts be grown under them with advantage. In all cases they should be placed on bricks, with spaces between them. Ventilation is then secured; and even Cauliflower plants in winter will do well without the constant attention to 'giving air,' so necessary in the old garden frame culture. In gardens that are confined and very warm, it may be necessary to have the ends not quite closed up, but a

small opening left at the top, at *a* in the figure, just under the ridge, to let out the heated air. My vinery stands in a very exposed place, and has not required it."

In reference to the foregoing we have received the following from Mr. Rivers:—

"I send you a slight modification of that humble vinery, which I find simple, eligible, and agreeable, and likely to supersede the original form.

"It was one day about the end of June last, that I found myself looking into my original 'Curate's Vinery,' and admiring the Vines then in blossom, although those within a few yards of it growing in the open air were scarcely in full leaf. I pictured to myself the bunches of Grapes suspended from the Vines in the warm, moist atmosphere of the trench lined with slates. My thoughts then reverted to my boyish Grape-loving days, when, in an old vineyard planted by my grandfather, I always looked for some ripe Grapes about the end of September; and I vividly remembered that I always found the best and ripest bunches with the largest berries lying on the ground, and if the season were dry and warm, they were free from dirt, and delicious (I think I always strongly accented the *de*), and so I gradually travelled in thought from bunches of Grapes lying on the ground to *idem* lying on slates.

"The idea was new, and I commenced at once to put it into practice by building a 'Curate's Vinery' on a new plan.

"I, therefore, placed two rows of bricks endwise (leaving four inches between each brick for ventilation) on a nice level piece of sandy ground, and then paved between them with large slates ('duchesses') placed crosswise. On the bricks I placed two of the ridges of glass, as given in the foregoing figure, each 7½ feet long, and thus formed my vinery 15 feet in length. One Vine will in the course of two years fill a vinery of this length; but to reap the fruits of my project quickly, I planted two Vines, one in the centre, the other at the north-east end; for these structures should stand north-east and south-west. One of these Vines which had been growing in a pot in the open air was just beginning to show its fruit-buds—it was quite the last of June—its fruit are now fully coloured and quite ripe. I, therefore, feel tolerably well assured that Grapes lying on a floor of slates such as I have described, will ripen from two to three weeks earlier than in vineries of this description with a furrow, and as much earlier than Grapes in a common cold vinery. Black Hamburgs and other kinds of Grapes not requiring fire heat may thus be grown in any small garden at a trifling expense. I am, indeed, inclined to think that the Frontignans, and nearly all but the Muscats, may be ripened by this method, so intense is the heat of the slated floor on a sunny day in July.

"Some persons may think that the heat would be scorching, and that leaves and Grapes would alike become frizzled; but few gardeners know the extreme heat a bunch of Grapes can bear. I remember a lady friend who had resided some time at Smyrna, telling me that one afternoon at the end of summer, when the Grapes were ripening, she was sitting in her drawing-room and admiring some large bunches of Grapes hanging on a Vine which was growing against a wall in the full sunshine. Knowing the danger of going into the open air without a parasol, she rushed out, cut a bunch of Grapes, and returned to her seat in the shady room. The bunch of Grapes was so hot that she was obliged to shift it from hand to hand. I observed in the hot weather we had in July last year, one or two bunches of Muscat Grapes nearly touching the chimney of the stove in which a fire was kept up every morning, gradually turning into raisins. I felt of them when the sun was shining on them, they were not burning hot but next to it.

"I allowed them to dry into raisins, and very fine they were, but not better than the finest imported from Spain.

"With respect to the superior ripening power of slates or tiles placed on the surface of the earth I was much interested in once hearing a travelled friend say that when he was at Paros, he observed many Vines trained up the marble rocks peculiar to the island; and in all cases the Grapes lying on the surface, which was almost a continuous mass of rock, were ripe, while those a few feet from it, on the same Vine, some of the branches of which were trained up the wall-like rocks, were quite green. In telling me this he said he was never more impressed with the ripening power of the earth's surface.

"I have, in giving the figure and description of the 'Curate's Vinery,' made it adapted for one Vine, the width of it being 2 feet 6 inches only. If this width be increased to 3 feet 6 inches

two Vines can be trained under the same roof, and thus at a trifling additional cost double produce can be obtained. I have very recently planted some Peach trees in one of these slate-paved vineries, and feel assured that very early and very fine Peaches can be grown in such places. I have managed my trees in this way—I took two pyramids full of blossom-buds, cut off the shoots on one side so that the stem would lie flat, and I then pegged it down with hooks made of stout iron wire, thrusting them into the soil between the interstices of the slates.

"Cultivators will think of red spider making his home in such (for him) a happy, hot place; but it may be made so uncomfortable by keeping flowers of sulphur strewed over the slates till near the ripening season, that no inconvenience need be apprehended. It will be perceived that the ventilation is all lateral, and on the same principle as that of my orchard-houses, nothing can be more perfect. In the figure of the 'Curate's Vinery,' with a furrow, it will be seen I have left a small aperture under the apex of the roof for the escape of rarefied air. In my paved vineries I have not done this, and yet the ventilation is perfect. I have not yet ascertained in what manner the heated air escapes. The ventilating apertures are all on the surface of the soil, and at the same level; but I suppose it stoops to get out, having no other mode of egress.

"I ought to add, that a 'Curate's Vinery' for Peach trees need be but 10 feet long, in two five-feet lengths."—THOS. RIVERS.

TRADE LISTS RECEIVED.

Peter Lawson & Son's List of Forest Trees, Shrubs, &c., is a copious catalogue of their usual 4to size, and contains the lists and prices of a very large collection of all kinds of ornamental trees and shrubs; Coniferae, &c.

A General Catalogue of Plants and Trees, offered by William Barnes, Camden Nursery, Camberwell, S.—This is an excellent catalogue of sixty-eight 8vo pages of closely printed matter, and contains large collections of every description of in-door and bedding plants and fruit trees. It is particularly rich in Indian Azaleas, for the cultivation of which Mr. Barnes is celebrated.

A Catalogue of Plants, Trees, Shrubs, &c., by Richard Bradley and Son, Halam, near Southwell, Notts., is an excellent general catalogue of nursery plants, and includes all novelties of merit both in trees, shrubs, house-plants, and plants for decoration.

TO CORRESPONDENTS.

EXHAUSTED GARDEN (J. Turner).—Dig up some of the white sandy soil, spread it three inches thick over the whole surface, fork it in; then trench the whole two feet deep, bringing the bottom foot to the surface for future cropping, giving it a similar mixture of sand. Manure with stable dung and bricklayer's limy rubbish. What you term "very fine growth" in your Marie Louise Pears we should describe, perhaps, as over-luxuriant growth. Dig a trench round them five feet from their stems, mine underneath them from that; cut away all the deep descending roots, put slates or tiles under to keep them from rooting downwards. Do not dig the surface within that five-root radius, but keep it mulched and watered well during dry weather to tempt fibrous roots to the surface.

PLANTING ASPARAGUS (W. W. B.).—The best time for planting Asparagus in a bed is when the shoots rising from the plants are about an inch long. This is about the end of March or early in April.

MELONS AND CUCUMBERS FOR EXHIBITION (W. W. J.).—Of Melons you had better grow the Trentham and Beechwood. Of Cucumbers the Manchester Prize, and Carter's Champion.

DECAYED LEAVES ON FRUIT-BORDER (An Old Subscriber).—Your gardener is quite right in covering over the surface of the border four inches deep with last year's leaves. They will keep the roots of the trees from excessive cold, and will tempt the fibrous roots to keep near the surface. The border should be neither dug nor forked, or the surface roots will be injured.

LYCOPODIUMS AND FERNS IN A ROOM (A Lover of Flowers).—The four species of Lycopodium that you mention (stolonifera, Schottii, caesium, and robusta) are certainly plants that require more heat and more atmospheric moisture than a warm room can give them. In a Wardian Case they might do. You will find L. caesium will lose its leaves [and finally perish. Yet we see so many anomalies in culture that it is possible you may succeed. All you can do is to pay constant attention to syringing and watering as you have hitherto done. In regard to watering at the roots, your plan of keeping them in saucers filled with moss and kept moist cannot be improved upon. They are not marsh plants, and, therefore, do not require deluging with water at the roots. We know of no work especially devoted to the culture of Lycopodiums in conjunction with Ferns. As you have had the four Lycopods only fourteen days, you have not had time to prove whether they will continue to thrive in your warm room. We strongly recommend you to procure a Wardian Case for them. Gold and Silver Ferns will not thrive long in your warm room. The dry atmosphere and low temperature will cause them to gradually sicken and eventually perish. There are many species of Ferns that will live with you if kept moist, and the leaves frequently sponged to wash off the dust. You might procure Adiantum assimile, Cyrtomium falcatum, Davallia canariensis, Platyloma

rotundifolia, Polystichum lonchitis, Pteris serrulata, Lastræa filix-mas cristata; and in Lycopods, obtain denticulata and apoda. Syringing of the Maiden-hair Fern during winter must cause the leaves to damp off. Cystopteris bulbifera is a deciduous Fern. It dies down in winter even in a greenhouse, but will spring up vigorously in spring. The Ferns we have recommended to you are all evergreen and hardy enough to live in a room where the frost is excluded. We should be glad to hear of such success or failure in cultivating these pretty plants.

COCOA-NUT FIBRE (T. West).—It can only be had by sending for it to the manufactory at Kingston-on-Thames.

AMARYLLIS-LIKE FLOWER (F. Mackenzie).—Amœnum and not amancus was the West-Indian label on your bulb. It is now called Hymenocallis amœna, and formerly Pancratium amœnum. It has been for ages a favourite garden plant, and in most gardens in a wide belt of countries all round the globe within the tropics, where it seeds as freely as a Crocus, and varies as much as they. It is also an old favourite stove bulb in British gardens, and went by many names, such as Pancratium fragrans, princeps, and ovatum. There is a figure of it in the "Botanical Magazine," xxxvi., t. 1467, as Pancratium amœnum, the difference between Pancratium and Hymenocallis being then not known. That difference is in the seeds. Those of Pancratium are hard, black seeds of little substance, while the seeds of Hymenocallis are large, soft, and green, after the fashion and substance of small and soft Peas.

AMERICAN BLIGHT (Hamensis).—The most effective application that we have used for destroying this aphid is spirit of turpentine, rubbed in with a hard brush into every crevice of the bark where the blight was visible.

OLD PEACH TREES TRANSPLANTED (C. Morris).—Your master is quite right, as to not giving water. The drier the soil is until the leaves have all fallen the better, and if not extra dry the trees will be all the better if they receive no watering until you wish to start them into growth next season on your glass wall. No watering now will swell or ripen the buds, but quite the reverse. It might help the trees if you cut the leaves in two.

GRAPES SHANKED (J. Willingham).—You tell the cause when you say "the roots are deep; no drainage; nothing to stop them going deeper." Cut away the deep, descending roots now, and do all that we directed at page 76 of our last number. Your Apple is the Margil; the Pear is unknown and a bad variety.

ADVERTISEMENT (E. M. Llanarthy).—Half-a-crown; stamps will do.

TIFFANY (—).—That marked 15-D will not last half the time that Shaw's will last, and there is the expense of putting on. 25-D is too thin to be used however low in price.

SEEDLING GERANIUM (J. Shield).—The truss and leaf are not differing from, or superior to, those of other varieties already in cultivation. Of the habit of the plant, of course, we can give no opinion.

NAME OF FERN (R.).—Athyrium filix-femina certainly, one of the more divided forms. Send us a more perfect frond if you wish to ascertain whether it is one of the named varieties.

NAMES OF FRUITS (W. H.).—1. Crassane. 2. Beurré Rance. 3. Winter Nelis. 4. Coe's Golden Drop. 5. Scarlet Nonpareil. 6. Not known. 7. Kerry Pippin. 8. Old Nonpareil. 9. Not known. 10. London Pippin. 11. Blenheim Pippin. 12. Lewis' Incomparable. 13. Norfolk Beefin. 14. Kentish Fillbasket. (A Subscriber, T.).—1. Crassane. 2. Beurré Rance. 3. Ne Plus Meuris. 4. Winter Nelis. 5. Duchesse d'Angoulême. 7. Winter Nelis. 8 and 9. Marie Louise. 10. Louise Bonne of Jersey. 11. Chaumontel. 15. Easter Beurré. Apples.—13. Adams' Pearmain. 14 and 16. Unknown.

POULTRY AND BEE-KEEPER'S CHRONICLE.

POULTRY SHOWS.

NOVEMBER 21st, 22nd, 23rd, and 24th. WEST OF SCOTLAND ORNITHOLOGICAL ASSOCIATION, GLASGOW. (Pigeons and Canary Birds.) Sec., Thos. Buchanan, 74, Argyle Street, Glasgow.

DECEMBER 3rd, 4th, 5th, and 6th. BIRMINGHAM. Sec., Mr. John B. Lythall, Offices, Unity Buildings, Temple Street, Birmingham. Entries close November 1.

DECEMBER 6th. HULL AND EAST RIDING. Sec., G. Robson, 25, Waterwork Street. Entries close November 22nd.

DECEMBER 12th, 13th, and 14th. NORTHERN COUNTIES (DARLINGTON). Sec., J. Hodgson, Darlington. Entries close Nov. 19th.

DECEMBER 12th, 13th, 14th, and 15th. CRYSTAL PALACE. (Poultry, Pigeons, Rabbits, Ornamental Water Fowl, and Pheasants). Sec., Mr. W. Houghton. Entries close November 10.

DECEMBER 18th and 19th. LORD TREDEGAR'S, at Newport, Monmouthshire. Sec., Mr. C. H. Oliver, Commercial Street, Newport. Entries close Nov. 21st.

DECEMBER 21st and 22nd. HALIFAX PIGEON SHOW. Sec., D. R. Edgar. Entries close December 8th.

DECEMBER 28th and 29th. KENDAL. Hon. Secs., G. C. Whitwell and T. Wilson.

JANUARY 30th and 31st. ULVERSTON. Secs., Mr. T. Robinson and Mr. J. Kitchen. Entries close January 10th.

N.B.—Secretaries will oblige us by sending early copies of their lists.

HOW TO SEND POULTRY TO AN EXHIBITION.

GOING home moodily through Bedford Square, a door opened, and a good-looking girl flew from the passage into a brougham.

Did it ever strike you, reader, that it is a very singular thing that a man like Lord Brougham should, to his other claims to distinction—law, chancery, politics, philosophy, theology, science—add that of having invented a carriage. The name will go down to posterity: and if there is no explanation, what difficulties will be caused by the fact that in the early part of the nineteenth century there was a celebrated statesman, lawyer, and

peer who bore the same name as a small carriage then much in vogue. In the year 2460 a strong-minded woman, present at a midnight dinner where the subject is mooted, will explain that in those remote times care was not taken to chronicle correctly events as they occurred, and there was considerable obscurity about the birth of this man, who, for the age in which he lived, was clever, though, she believed, in their days he would hardly pass his examination as usher to a charity school. She was, however, glad to say that, although she could not bring proof in support of her assertion, she thought she could explain the coincidence of names to their satisfaction. She need hardly tell them morals were at a low ebb at that period of their history; children were constantly exposed and deserted, and, where no clue could be found to the names of the parents, the unfortunate children were named at the will or caprice of the masters of the workhouses. This great man in question was a deserted child: having been put by his unnatural parent in a brougham that was standing at a door, he was named after the carriage in which he was found, and afterwards became a peer and Chancellor of the United Kingdom.

This good-looking girl had not seated herself in the carriage ere we heard a voice from the inside—"Mary, my dear Mary, do stop one instant; you have nothing round your throat." "Oh, mamma," said she, "I am tired of hearing you tell me that." "Yes," replied the good, fond, careful mother, "but you pay no attention to it."

It will be to many readers just as tedious if we tell them how to choose, prepare, and pack their fowls for Birmingham. And yet, before the Show is over, some will blame themselves for not attending to what we said; others, with that facility which we always have for transferring our own faults to the shoulders of others, will try to prove our advice came too late, and that they *could* not have followed it if they *would*. But many, when they see scalped or beaten hens, dirty plumage, cramped birds, or broken heads, will wish they had followed the advice we feel it our duty to offer, two or three times every year, before the great contests of the poultry world.

It does not follow that because fowls have been brought up together, and have lived in peace and amity in the same yard, that they will do so in a cage, basket, or pen. Those intended for exhibition should be tried by being shut up together at times. If they beat one, that one must be taken out; or if one beats the others, *she* must be removed. Indeed, there is little hope of success for a pen composed of quarrelsome birds. When we see such we always blame the owner or his servants, for we have never seen a yard from which we could not pick an harmonious pen.

The birds should be well fed—rather better than usual, for a fortnight before the Show; they should have a good feed of soft food before they start for the Show; their legs, plumage, and faces should be clean, even if it be necessary to wash them. Exhibitors should always recollect high condition and beauty of plumage are required in prize birds.

They should be sent in round baskets, as that shape insures unbroken plumage, and they should be covered at top with canvass—there is then no fear of damaged heads. The dimensions of the basket should allow of all the fowls sitting down at once, and it should be high enough for the cock to stand upright. It should be close all round.

ON THE MANAGEMENT OF POULTRY SHOWS.

(Continued from page 83.)

SHEFFIELD (continued).—This is a four-days Show, and the Judges ought to make their awards the day before it is opened; and while they are doing so, the members of the Committee who are exhibitors ought in common fairness to be absent from the show-yard. I attended the last Show, as soon as it was opened, to purchase some of the prize birds. Not a single prize pen was ticketed, and I found that certain favoured individuals had purchased birds, through one of the Committee, before the prize list was published. Such a manifestly unfair proceeding will not, I hope, be allowed to occur again.

PRESTON.—This is an interesting Show, and is held in a building very well adapted in every respect for the comfort of the birds. The poultry pens are open to improvement; and I would recommend the Committee at their next Show to give a trial to the excellent pens of Turner of Sheffield, or Blythe of Birmingham. The railway charges for the carriage of poultry to

Preston are too high; and I hope the Committee will make better arrangements in this respect for their next Show.

CARLISLE.—A nice Show, and the prize money promptly paid. "Cannie Cumberland" evidently admires poultry, so I think from the number of exhibitors in the county. The railway charges for the carriage of birds to this Show are also too high.

WORCESTER.—A well-managed Show, and uncommonly well patronised by the town and neighbourhood. Being confined to chickens, this Show is always interesting as a criterion of what Birmingham will be, as it takes place only a few weeks before our leading Show. Bantams are the only classes in which birds "of any age" are admitted. This is, I think, a mistake; and as complaints have been made of the exception, I dare say it will not occur another year.

BRIDGNORTH.—A Show which improves every time it is held. It is doubtful, however, if the silver cup given to the exhibitor who makes the greatest number of points in poultry is not a mistake. The competition for it is confined to four or five, and has no interest for the majority of the exhibitors. I should like to see the money given to the other prizes, as I think it would materially benefit the Show. Complaints have been made, I believe, that the railway does not run into the town, and it has been difficult to get birds to the Show; but I am told this evil will be obviated next year.

BATH AND WEST OF ENGLAND has great attractions for the west-country folk. The prize list is a liberal one; but there is far too great a disparity between the first and second prizes. This must have an injurious influence on the number of entries.

COALBROOKDALE.—It is surprising that this Show has not a much larger number of entries. What can be the reason? Is it that exhibitors prefer money prizes to silver cups? This is at any rate a very nice and select Show, and the beautiful scenery of the adjacent country is well worth a visit.

CHESTERFIELD.—This may be called a rural Show from the great number of country people that attend it. It is well managed, and is held in a comfortable market hall. At the last Show the Committee gave notice that no bird would be allowed to be touched by a spectator on pain of instant dismissal. This was simply an "oratorical flourish," and was not attended to in the least; for I never, at any other Show, saw so many birds so roughly handled by persons who evidently knew nothing of the value of fancy poultry.

(To be continued.)

DEVIZES EXHIBITION OF POULTRY.

ACCUSTOMED as we have been for a number of years past to visit most of our Poultry Exhibitions, it has but rarely been that we have seen a building in every way so suitable, or a meeting so well conducted, as the one just closed at Devizes. Among the amateurs of poultry, this Show was looked forward to with the greatest interest, on the supposition that it would afford them an opportunity of purchasing suitable specimens to compete for the premiums offered by the Committees of the Birmingham and Crystal Palace Shows. In very few instances indeed did disappointment ensue. The birds throughout were very far beyond average merit, as compared to those of former years, and the consequence was that a large sale was effected. The attendance of visitors was good, and the weather, most fortunately, quite satisfactory. All the pens were ranged in single rows, therefore no complaint could possibly arise from advantages of position. The health of the birds was also unusually good throughout, scarcely a single instance of ailment being apparent, though most carefully sought for.

The *Spanish* classes were the first variety arresting the attention of visitors on entering the building. It is long since we have seen so perfect a collection; and although Miss M. L. Rake, of Bristol, managed to secure the cup and also the two first prizes for adults and chickens, the Messrs. Rodbard and Martin exhibited birds it was difficult for even the most fastidious and fault-seeking to complain of. The *Grey Dorkings*, whether old or chickens, were such as to cause them to be the objects of especial admiration to visitors. The pens belonging to the Marchioness of Winchester, Lady Louisa Thynne, and Mr. William Bromley, were such as would add very materially to the credit of even the largest of our poultry meetings. As in *Spanish*, so in the *Dorkings*, the early-hatched chickens took the cup from their more aged rivals. The season of the year has an inevitable tendency

to this result; for adults are, as yet, scarcely in the plumage and general condition they may be expected to attain in a month or six weeks hence. The White Dorking class was limited to four pens only, but the winning pens were quite equal to their position. In the Grey Dorking chickens, the cup birds, bred by Mr. Bromley, were the best pullets "in hand" we ever remember seeing; proving, beyond doubt, the Silver Greys are, even in point of size, quite able to hold their own against the darker varieties, although the popular opinion of many breeders is directly opposed to such a result. The Buff *Cochins* were one of the best classes met with this season; within the last two years they have wonderfully advanced, both in size and character. The Grouse and White varieties were certainly not equal to them. The "Brown Reds" took the cup against the Black-breasted Red *Game*: the whole class was excellent. The Blacks were decidedly the best of the *Game* for "any other variety." Several pens in this class were sadly mutilated by the old folly of putting strange hens to the cock to complete the pen: consequently, at least a pair were entirely scalped, and would never again recover sufficiently to enter any Exhibition. We should have thought long since owners would have become more alive to their own interests than to attempt to reconcile birds so inately pugnacious, and whose anger is naturally provoked by the excitement of a show-room. *Malays* were first-rate. It is no disgrace to be beaten by so experienced a breeder as Mr. Ballance, of world-wide Malay notoriety. This gentleman showed some marvellously good birds, both coloured and white ones. The *Hamburgs* stood highest in the Gold-pencilled and Gold-spangled birds. The White-crested were the best of the *Polands*. The *Game Bantams* were as perfect a class as any in the building. The *Sebrights* were both a well-filled class (very unusual of late), and what is far more important, a very superior one. Nothing new presented itself in the extra-variety class.

The *Turkeys* were perfection. And we must here direct attention to a brace of wonderfully capital *Yellow* hens which, under misapprehension, were entered for the Marchioness of Winchester's prize for the best two *Cambridgeshire* hen *Turkeys*; they were considerably the largest hen *Turkeys* in the Show, but being wrongly entered, could not compete.

The *Geese* were quite equal to the *Turkeys* as to excellence throughout, the first prize falling to the Marchioness of Winchester's pen, that did such good service to Mr. Fowler, of Aylesbury, in past years. The gander in this pen certainly stands alone, and it was jocosely stated in our hearing by a visitor, whose eye had just fallen on the pen—"Why, old gentleman, what here as usual, and looking as well as ever! How different ganders are to men—they seem *never* to get any older; old age *cannot* kill them." The outward appearance of the pen seemed almost to justify the remark—they never were shown in better trim.

The *Rouen Ducks* were better than the *Aylesbury Ducks*, several of the latter variety being exhibited with faulty bills. *Buenos Ayrean Ducks* were as good a class as ever were seen at any Exhibition, and Mr. Hon. Secretary may well exult on sweeping the board of all the prizes, when the competition was far beyond any we have previously witnessed. In the "any other variety of Ducks" several unique breeds competed. Mr. Harvey Dutton Bayley taking precedence with Ruddy Shelldrakes, closely pushed by an exquisitely beautiful pair of *Carolina Ducks*; whilst some first-rate *Call Ducks* (both White and Greys) were reluctantly excluded position beyond high commendations.

In this class were exhibited some very superior cross-breeds between the White Muscovy and *Aylesbury* breeds. They were very remarkable both for size, and especially for a large black patch directly on the top of the head, similar to the *Spot Pigeon*; the rest of the plumage being unsullied white.

The *Game Bantam Cock* class was as much admired as any in the whole Show, most of the leading colours in *Game* fowls being well represented.

In the *Single Cock* class, the *Grey Dorkings* were the best of any, it would be a difficulty to find better.

The Judges were—Mr. Edward Hewitt, of Eden Cottage, Spark Brook, near Birmingham; and Mr. T. Challoner, of Whitwell, Chesterfield.

SPANISH.—First, Miss M. L. Rake, Brandon Hill, Bristol. Second, J. Martin, Mildenhall Mill, Claines, Worcester. Highly Commended, H. Lane, 69, Milk Street, Bristol. Commended, Hon. and Rev. E. Talbot, Evercreech, Somerset; J. K. Fowler, Prebendal Farm, Aylesbury. **CHICKENS.**—First and Cup, Miss M. L. Rake. Second, J. R. Rodbard, Aldwick Court, Wrington, Bristol. Highly Commended, H. Lane. Commended, J. R. Rodbard; C. Atkins, Sewer Cottage, Thames Bank, Pimlico.

DORKINGS (Coloured).—First, Lady Louisa Thynne, Muntham Court, Worthing. Second, Marchioness of Winchester, Amport St. Mary's Andover.

DORKINGS (White).—First, Mrs. H. Fookes, Whitechurch, Blandford, Dorset. Second, Capt. Beardmore, H.A., Uplands, Fareham, Hants.

DORKING CHICKENS (any colour).—First and Cup, W. Bromley, Acocks Green, Birmingham. Second, G. Chadwin, Tollard Royal, Salisbury. Commended, W. F. Knatchbull, Esq., M.P., Babington House, Bath; C. H. Wakefield, Malvern, Wells.

COCHIN-CHINA (Cinnamon and Buff).—First and Cup, M. Marks, Edgbaston Street, Birmingham. Second, J. W. Kelleway, Merston, Isle of Wight. Commended, Rev. G. Gilbert, Claxton, Norwich; J. W. Kelleway.

COCHIN-CHINA (Any other variety or age).—First, P. Cartwright, Oswestry (Partridge). Second, M. Marks, Edgbaston Street, Birmingham.

GAME (Black-breasted and other Reds).—First and Cup, J. Fletcher, Stoneclough, Manchester. Second, E. Archer, Malvern. Highly Commended, J. Fletcher; J. Lamb, Highworth. Commended, W. Rogers, Woodbridge, Suffolk; J. Lamb.

GAME (any other variety or age).—First, M. Marks, Edgbaston Street, Birmingham. Second, A. M. Sloper, Seend (Duckwing). Highly Commended, T. Robinson, The Gill, Ulverstone; W. Cannan, Adolphus Works, Bradford, Yorkshire (Duckwing). Commended, P. Mason, Brightlingsea Hall, Essex.

MALAYS (any age).—First and Second, C. Ballance, 5, Mount Terrace, Taunton. Commended, W. Manfield, jun., Dorchester.

HAMBURGS (Gold-pencilled, any age).—First and Cup, J. Munn, Heath's Hill, Stacksteads, Manchester. Second, J. Martin, Mildenhall Mill, Claines, Worcester. Highly Commended, J. Munn. Commended, G. W. Locke, Newport, Isle of Wight; W. Withington, Market Place, Devizes; M. Marks, Edgbaston Street, Birmingham.

HAMBURGS (Silver-pencilled, any age).—First, T. Keable, Rowdefield Farm, Devizes. Second, W. H. Kerr, London Road, Worcester. Highly Commended, T. Keable.

HAMBURGS (Silver-spangled, any age).—First, W. Cannan, Bradford, Yorkshire. Second, Capt. Beardmore, H.A., Uplands, Fareham. Highly Commended, J. Dixon, Bradford, Yorkshire.

HAMBURGS (Gold-spangled, any age).—First, W. R. Lane, Bristol Road, Birmingham. Second, W. Cannan, Bradford, Yorkshire. Very Highly Commended, S. H. Hyde, Taunton Hall, Ashton-under-Lyne.

POLANDS (Black with White Crests).—First, J. Dixon, Bradford, Yorkshire. Second, T. P. Edwards, Lyndhurst, Hants. Commended, G. Ray, Ivy Cottage, Minestead, Lyndhurst, Hants; T. P. Edwards.

POLANDS (any other variety).—First, J. Dixon, Bradford, Yorkshire. Second, Mrs. Pettat, Ashe Rectory, Hants.

BANTAMS (Game).—First, T. H. D. Bayly, Ickwell House, Biggleswade, Beds. Second, W. R. Lane, Bristol Road, Birmingham. Very Highly Commended, W. S. Forrest, Eagle Cliff, Greenhithe, Kent. Highly Commended, G. Chadwin, Tollard Royal Salisbury; J. Long, Devizes (Duckwing). Commended, T. H. D. Bayly.

BANTAMS (Gold and Silver-laced).—First, M. Marks, Edgbaston Street, Birmingham. Second, T. H. D. Bayly, Ickwell House, Biggleswade, Beds. Highly Commended, C. Ballance, Taunton, Somerset (Silver); Mrs. Pettat, Ashe Rectory, Hants (Silver).

BANTAMS (any other variety).—First, T. H. D. Bayly, Ickwell House, Biggleswade, Beds. Second, M. Marks, Edgbaston Street, Birmingham (White). Highly Commended, J. Dixon, Bradford, Yorks (Black). Commended, J. J. Fox, Devizes (Black); W. Medicott, Potterne, Devizes (White).

ANY OTHER DISTINCT OR CROSS BREED NOT MENTIONED.—First, A. Heath, Calne (Brahma Pootra). Second, W. R. Lane, Bristol Road, Birmingham (Black Hamburgs). Commended, W. Fowle, Market Lavington; J. K. Fowler, Prebendal Farm, Aylesbury (Brahmas).

TURKEYS.—First, Mrs. H. Fookes, Whitechurch, Blandford. Second, Rev. H. G. Baily, Swindon (Cambridge). Very Highly Commended, Miss J. Milward, Newton St. Loe, Bath.

GESE.—First, Marchioness of Winchester, Amport St. Mary's, Andover, Hants. Second, Mrs. H. Fookes, Whitechurch, Blandford. Very Highly Commended, T. Williams, Southcote Manor House, Reading; T. H. D. Bayly, Ickwell House, Biggleswade, Beds (Sebastopol). Highly Commended, W. Manfield, jun., Dorchester; T. Brown, Horton, Devizes.

DUCKS (Aylesbury).—First and Second, J. K. Fowler, Prebendal Farm, Aylesbury. Highly Commended, G. Briant, jun., Littlecote Mills, Pewsey.

DUCKS (Rouen).—First, J. K. Fowler, Prebendal Farm, Aylesbury. Second, Miss L. Crawshaw, Caversham Park, Reading. Highly Commended, W. Hillier, Monkton, Swindon; C. Edwards, Brockley Court, Bristol.

DUCKS (Black East Indian).—First and Second, G. S. Sainsbury, Rowde, Devizes. Very Highly Commended, Capt. Beardmore, Uplands, Fareham, Hants.

DUCKS (any other variety).—First, T. H. D. Bayly, Ickwell House, Biggleswade, Beds. Second, Marchioness of Winchester, Amport St. Mary's, Andover, Hants (Carolina). Very Highly Commended, T. H. D. Bayly. Highly Commended, M. Marks, Edgbaston Street, Birmingham; J. Dixon, Bradford, Yorks.

GAME COCKS (any age or colour).—First and Cup, E. Archer, Malvern. Second, J. Fletcher, Stoneclough, Manchester. Third, G. Chadwin, Tollard Royal, Salisbury. Highly Commended, J. Wentworth, Beckhampton, Marlborough. Commended, T. Burgess, jun., Burleydam, Whitechurch, Salop.

GAME BANTAMS.—First, T. H. D. Bayly, Ickwell House, Biggleswade, Beds. Second, J. Camm, Farnsfield, Southwell, Notts. Third, G. Chadwin, Tollard Royal, Salisbury. Highly Commended, T. Burgess, Burleydam, Whitechurch, Salop. Commended, T. H. D. Bayly.

SPANISH COCKS.—Prize, J. R. Rodbard, Aldwick Court, Wrington, Bristol. Highly Commended, H. Lane, 69, Milk Street, Bristol.

DORKING COCKS.—Prize, Lady Louisa Thynne, Muntham Court, Worthing. Highly Commended, Marchioness of Winchester, Amport St. Mary's, Andover, Hants.

HAMBURGH COCKS (Pencilled).—Prize, J. Martin, Mildenhall Mill,

Claines, Worcester. Highly Commended, T. Keable, Rowdefield Farm, Devizes.

MALAY COCKS.—Prize, C. Ballance, 5, Mount Terrace, Taunton. Highly Commended, W. Manfield, jun., Dorchester. Commended, W. Manfield.

ANY BREED NOT MENTIONED.—Prize, T. H. D. Bayly, Biggleswade, Beds (Bantam).

A Special Prize of Two Pounds, the gift of the Marchioness of Winchester, for the best Pen of Two Cambridge Turkey Hens—Prize, Miss L. Crawshaw, Caversham Park, Reading.

DUCKWINGED GAME FOWLS — SILVER-PENCILLED HAMBURGH COCK'S COMB

ARE Duckwinged Game fowls a distinct variety, or a cross of the White and Black-breasted Reds? I am told by an exhibitor that they are a cross by a White Game hen and a Black-breasted cock, and that I cannot breed birds true to colour by Duckwinged only. I have a pen of the Duckwinged Game, and have some chicks from them; some are much like the old birds, but not true to feather, they having striped hackles instead of white; and some of the same hatch are very nice chicks of the Black-breasted, well marked in feather, which I intend to exhibit as Black-breasted Reds all from the same cock and hen.

Also, should a Silver-pencilled Hamburg cock's comb be straight and the point turn up or not?—J. B.

[There is no doubt the Duckwinged are a distinct breed, more so than many. We could point out yards where they have been bred in purity, and in the perfection of feather for years. The Black-breasted Red and White would produce Piles. The facts you mention prove nothing unless you can show the birds from which they are bred are thoroughly pure themselves. This is important, because we know some Duckwing breeders cross with the Black Red at times for colour, and it is possible your fowls may be the produce of such.]

A Pencilled Hamburg cock's comb should be firm on his head, not too narrow, full of points, and the pike behind should turn upwards.]

DIARIES.

DIARY FOR THE DAIRY, PIGGERY, POULTRY-YARD, &c.*—

We have on more than one occasion recommended this very useful and very complete Diary. It gives a monthly calendar showing each day when means are adopted upon it for obtaining produce, whether from mare, cow, sheep, goat, sow, goose, pea-fowl, turkey, duck, or hen, that produce ought to arrive. It gives, also, a calendar for the dairy in which to record each day's produce of milk, butter, and cash. It gives a calendar for the poultry-yard for recording the number of eggs each day from each variety of fowl; eggs sold and price; eggs exchanged, eggs used, broods produced, eggs sat upon, and number of chickens produced. It gives equally methodical and useful calendars for the piggery and apiary; columns for general cash account; monthly calendars of operations, and other useful information.

PEAT'S FARMER'S DIARY.†—It is now the eighth year in which this Diary has appeared, and it has this great improvement over its predecessors, of having its pages ruled, so that all the accounts and memoranda can be kept with more clearness and neatness; but we recommend next year that the lines be more visible. It contains an almanac, prominently noticing when quarter sessions occur, policies fall due, when notices must be given, &c. Then there are breeders' tables and cash-account leaves for each month; cropping or produce tables; outlay during the year under separate heads of cattle, sheep, manure, &c.; income during the year under similar heads; and at the end are many useful tables, recipes for animal diseases, list of fairs, &c.

RABBITS WILL PAY FOR KEEPING.

I HAVE no doubt from the account I gave of my miniature warren that many of your readers' situations will be found to offer suitable places for making the same. I had forgotten to bring to their notice the many unused places that might be turned to advantage. For instance: an old worn-out gravel-pit would make a first-rate place, the Rabbits would burrow into the sides, retain all their wild nature, still be in confinement, coming out

into the pit to feed. I know of one near London that is progressing famously. The pit covers an area of about 200 square yards, and is about 10 feet deep. The proprietor has had large sloping mounds, and ridges of gravel and clay, thrown up to the height of about 6 feet in different parts, which brings the Rabbits nearer to the surface, yet, being in the centre, affords them no chance of escape. This pit is in a large field partly under grass and vegetable cultivation. Around the edges, to prevent cattle falling or vermin getting down, there is a galvanised wire fencing. The bottom of the pit is reached by a ladder; and the field in which it is situated supplies them with nearly sufficient fodder. Readers must not misunderstand me. It does not require that these miniature warrens should be in a vegetable-growing district to make them pay, as any kind of green food will suffice. All kinds of grasses, the trimmings of trees and hedges, the refuse of the garden, the litter of a stable—all will feed Rabbits. There is one thing worthy of especial mention, because I do not think it is generally known—that is, rushes being a first-rate food, and of which the Rabbits are very fond; and it is very fattening, and in marshy districts large quantities may be got without trouble. In the pit I have just mentioned the Himalaya is the kind kept, on account of their skins being so very valuable, of which the gentleman informed me they make imitation ermine. It was a pretty sight to see them all out feeding: their silvery white coats, and their black ears, nose and feet, gave them a handsome appearance—in fact, I think they are the prettiest variety we have.

About eighteen months since the "London Journal" gave a series of articles on Rabbit-keeping, and one of them contained instructions to make a Rabbit-pit. From that account a friend of mine, living at Paddington, with a walled garden only 180 feet deep and 40 feet broad, made one. The opening was 6 feet square, and pit 5 feet deep. To prevent the sides falling in, it was faced with one-inch boarding like a square frame, and the bottom of the pit paved with twelve-inch flat tiles. At each side were three holes made in the board which was at the bottom, and at each hole was a sliding door which could be opened or shut from the top of the pit by means of a cord. Over the opening of this pit was erected an ornamental zinc roofing sufficiently high from the ground to serve the purpose of a summer-house as well, and at the top was a pigeon-cote. He put down four Himalayan does about four months old; and when they had been there about six weeks, he thought they had sufficient time to burrow and make their way into the ground through the holes to be able to form their nests when required. He had accustomed them to assemble at the sound of a whistle whenever he fed them, which he always does very regularly twice a-day. On their coming out to feed he lets the doors down, and then can catch any if he wishes. He put the buck down and left him there all night, and in the morning took him up, and opened the doors for the others to go about their work of burrowing. At the end of the month he saw plainly they were thinking about their nests, from their picking up bits of hay, &c., in their mouths. He then made a practice of putting the buck down every six weeks for two nights, taking him up every morning, and opening the doors for the does to go to their nests. The above has now been made about twelve months, and has been very successful, and he finds they increase surprisingly—often having to send young ones to market, besides supplying his own table and one or two dealers, to keep down the stock. They have never yet made their appearance at the surface, but their runs extend all over the garden. The expense of making the above was very trifling, having done all the work with the exception of the roof himself.

I think now your readers will see there are many ways of keeping Rabbits without occasioning the trouble of cleaning out, or the smell so generally complained of in hutches, and the time in feeding a large stock is considerably lessened. Besides, Rabbits kept in a court or pit are so much more amusing animals; you see their little gambols, their jealousies, trying to master each other, and many other little antics which add to their attraction. I advise where there is room, a court or pit for Rabbit-keeping; in towns you are of course obliged to be content with the hutch. A friend of mine is having a large court made, and when finished I will send dimensions and all particulars of improvements introduced.

And now as to the feeding of them. Rabbits in miniature warrens, pits, or courts do not require the same care in feeding as in hutches. In my warren they had little else but green food and straw in summer; but in winter I gave Swede turnips,

* *Diary for the Dairy, Piggery, Poultry-yard, Pigeon-house, and Apiary for 1861.* By an Essex Amateur. London: Cottage Gardener Office, &c.

† *Peat's Farmer's Diary and Account Book for 1861.* London: Simpkin and Marshall, &c.

mangold wurtzel, hay, straw, &c.; and when the weather was very hard I gave, now and then, some granary sweepings, consisting of different kinds of grain, which I had bought cheap. There are few persons who are aware of the nutriment contained in straw, wheat, oat, or barley. I gave wheat. When green food cannot be got in sufficient quantity to support the stock, I advise fresh ale grains mixed with middlings—not fine pollard, as some corn-dealers will try to palm on you. The grains must be sweet and rubbed well with the middlings. I give this food to my hutch Rabbits, and I find it much cheaper than oats, and the Rabbits make flesh faster. But their food must be varied: boiled potato parings, pig potatoes mashed with middlings, and occasionally barleymeal, will fatten Rabbits. To fatten Rabbits quickly, I have found grey peas soaked in water till they begin to sprout, a few given daily, say at noon, and the middlings at the other two meals. I find for fattening three meals a-day better than two; giving less at each meal prevents their blowing on it and taking a disgust to their food, which they will do when given in too large a quantity: it is better for them to leave off eating hungry than to be overfed. I have been told that oil cake will fatten Rabbits to an immense size; but that you have to starve them into the eating of it at first—of course, it must be ground or pounded fine. I think of trying it. Put two young Rabbits of the same litter and size, and feed one on oil cake, the other on the old system, and see which makes flesh the fastest.

In feeding weanling Rabbits, the oftener you can do it the better, and take away that which is left from the former meal and give fresh—it prevents them blowing on it; and what is taken away will do for the elder ones which are not so fastidious, and by this means you prevent waste. Old Rabbits do not require feeding more than twice a-day—early in the morning and late at night. I know fanciers who are much from home only feed once a-day—at night. Rabbits are naturally fond of feeding at night; but I think there is very little to prevent feeding twice. I can feed my stock, which is nearly one hundred, and most of them in hutches, in about twenty or thirty minutes when pressed for time. In my next I will give further particulars on feeding and management, and shall be pleased to answer any queries your readers may require.—R. S. S.

EXHIBITION OF CANARIES AND OTHER CAGE BIRDS.

The third annual Exhibition of birds, under the patronage of W. T. Cox, Esq., Mayor of Derby, took place on the 3rd inst., at the Temperance Hall, Derby. The day, the reverse of a thorough November day, was very fine, the sun shining brilliantly, and having a charming influence over nearly 300 merry little songsters. The Canary portion formed the greatest feature of the day, there being shown fourteen distinct classes of this kind alone. The Mule birds (Canary and Goldfinch especially), were very fine. The number of other birds, besides British and Foreign, sent for exhibition was large, and were generally in excellent condition. The Parrots were represented by several first-rate specimens. A label on the cage of a Starling specified that its occupant could whistle "The girl I left behind me." On one of the stands with the larger birds was a pen of very small Golden-spangled Bantams, which excited much notice.

The following is the list of prizes:—

FOR BIRDS HATCHED IN 1860.

Belgians (Clear Yellow).—First, and the presentation of a bird, the gift of one of the Judges, G. Barnesby. Second, S. Bunting. Third, J. Price.
Belgian (Clear Buff).—First, J. Price. Second, S. Bunting.
Belgian (Variegated Yellow).—First, G. Barnesby. Second, J. Brodie. Third, E. Orme.
Belgian (Variegated Buff).—First, G. Barnesby. Second, H. Beeston. Third, R. Bond. Fourth, E. Orme.
Lizard (Golden-spangled).—First, T. Carrington. Second, — M'Connell. Third, E. Orme. Fourth, G. Barnesby.
Lizard (Silver-spangled).—First, E. Orme. Second, G. Barnesby.
London Fancy (Jonque).—Prize, G. Barnesby.
London Fancy (Mealy).—Prize, G. Barnesby.
Norwich (Clear Yellow).—Prize, E. Orme.
Norwich (Clear Buff).—Prize, H. Beeston.
Spot or Cross Breed (Jonque).—Prize, G. Barnesby.
Spot or Cross Breed (Mealy).—Prize, J. Brodie.
Yellow and Mealy (Crested).—First in each class, R. Bond.
Goldfinch Mule (Jonque).—Prize, E. Orme.
Goldfinch Mule (Mealy).—Prize, T. Carrington.
Linnet Mule.—Prize, E. Orme.

OPEN COMPETITION FOR BIRDS OF ALL AGES.

Belgian (Clear Yellow).—Prize, A. Upton.
Belgian (Clear Buff).—First, T. Carrington. Second, E. Orme.
Belgian (Marked Yellow).—First, J. Price. Second, T. Crooks. Third, J. Orme. Fourth, G. Barnesby. Fifth, E. Orme.

Belgian (Variegated Yellow).—First, J. Fisher. Second, J. Wood. Third, E. Limbert. Fourth, — Winfield.

Belgian (Variegated Buff).—First, J. Orme. Second, — Winfield. Third, H. Beeston. Fourth, T. Carrington.

Lizard (Silver-spangled).—Prize, G. Barnesby.

Norwich (Clear Yellow).—First, J. Orme. Second, S. Bunting. Third, J. Hodgkinson. Fourth, A. Upton.

Norwich (Clear Buff).—First, J. Orme. Second, H. Beeston. Third, A. Simpson.

Norwich (marked Yellow).—Prize, R. Smith.

Spot or Cross Breed (Mealy).—Prize, E. Bemrose.

Goldfinch Mule (Jonque).—First, J. Orme. Second, S. Bunting.

Goldfinch Mule (Mealy).—Prize, S. Bunting.

Linnet Mule (Capped).—Prize, W. Holmes.

The Judges were Messrs. T. Mason, Nottingham; W. Matthews, Radford; and J. Widdowson, New Basford.—G. J. BARNESBY, 132, Abbey Street, Derby.

BROKEN COMBS IN A HIVE—FEEDING BEES.

THIS summer, for the first time, I became owner of some bees. Seeing in your useful paper that bees should be fed after such an adverse season, I offered syrup most conveniently by inverted bottles. Each hive had received from 3 lbs. to 6 lbs. of food; but, to my great annoyance, yesterday morning on visiting the hives I found one of them had evidently been lifted up from its board, and allowed to fall heavily down again, thus shattering the comb, which I see is now lying in confusion within the hive. Can I do anything to assist the poor insects in remedying their misfortune? Will they be able to store up any more food, and do you think they can avail themselves of what they have already carried in?—S. R. K.

[An accident of this kind is not easily remedied, and having happened so late in the season will very probably result in the destruction of the stock. Nothing must be attempted until the occurrence of a fine, mild day, when the hive may be inverted, and the combs replaced and retained in their natural position by the aid of strips of old comb, about half an inch wide, inserted between each. Two or three similar strips of sufficient thickness to keep the combs in firm contact with the top of the hive should then be laid across their edges in a transverse direction, and the whole being covered with a floor-board may be steadily returned to its natural position and place in the apiary. As soon as this is accomplished the stock should be liberally fed, in order to enable the bees to secrete wax for repairing their combs, as well as to store sufficient food for winter consumption. An efficient veil and stout woollen gloves must be worn whilst re-arranging the combs.

As to the mowing machines, buy any you fancy. They all work well.]

OUR LETTER BOX.

LIVERPOOL POULTRY SHOW (J. B.).—The Show will be advertised in due time, and will not take place until next January. It was on the 18th of this year.

CANARY-BREEDING (*Canariensis*).—There is no good book upon Canary-breeding and management. The way to make Canary-breeding profitable would be to breed a good variety, produce first-class birds, and get a name.

BULLFINCHES, GOLDFINCHES, AND LINNETS (*Last Rose of Summer*).—These birds will occasionally breed in confinement, but, as they are so easily procured, are not worth the extra trouble of rearing them. Young birds caught at this time have already got their wild note, and it is not at all probable that they can at that age be taught to whistle a tune. We believe Canaries and Starlings have been taught to whistle a tune as well as Bullfinches. The price they will fetch must greatly depend on the proficiency of the bird and the length of the purchaser's pocket. Birds are taught to pipe by whistling the tune to them often, and many times a-day, or by flageolet or bird-organ. After each feeding cover them up and play the tune two or three times. The method of teaching is described by Bechstein.—B. P. B.

FEEDING BEES (*C. H.*).—Equal parts of brown sugar and honey will do for bee-feeding. The flour of til we have never tried. It was a French suggestion; but, though it may be used to some extent by the bees as a substitute for pollen, we do not think it will supersede the use of honey or sugar for feeding them. Buy our No. 590, in that is a full essay on *Gladiolus* culture. You do not say the kinds you have.

LONDON MARKETS.—NOVEMBER 12.

POULTRY.

We have little variation to note. The supply is still below the average, but the demand is not great.

| | Each—s. d. | s. d. | | Each—s. d. | s. d. |
|--------------------|------------|-------|-----------------|------------|-------|
| Large Fowls..... | 4 0 to | 4 6 | Pheasants..... | 3 6 to | 4 0 |
| Smaller Fowls..... | 3 0 " | 3 6 | Partridges..... | 2 0 " | 2 3 |
| Chickens..... | 2 6 " | 3 0 | Grouse..... | 1 9 " | 2 0 |
| Geese..... | 6 0 " | 6 6 | Pigeons..... | 0 8 " | 0 9 |
| Goslings..... | 0 0 " | 0 0 | Hares..... | 3 0 " | 3 6 |
| Ducks..... | 2 6 " | 3 0 | Rabbits..... | 1 4 " | 1 5 |
| Ducklings..... | 0 0 " | 0 0 | Wild ditto..... | 0 8 " | 0 9 |

WEEKLY CALENDAR.

| Day of M'nth | Day of Week. | NOVEMBER 20—26, 1860. | WEATHER NEAR LONDON IN 1859. | | | | Sun Rises. | Sun Sets. | Moon Rises and Sets | Moon's Age. | Clock afterSun | Day of Year. |
|--------------|--------------|--------------------------------|------------------------------|-----------|-------|-----------------|------------|-----------|---------------------|-------------|----------------|--------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | |
| | | | | deg. deg. | | | m. h. | m. h. | m. h. | | m. s. | |
| 20 | Tu | Waxen chatterer comes. | 30.055—29.844 | 43—26 | N.W. | — | 29 af 7 | 2 af 4 | 59 11 | 7 | 14 5 | 325 |
| 21 | W | PRINCESS FRED. WM. BORN, 1840. | 29.771—29.715 | 53—26 | S.E. | — | 31 7 | 1 4 | morn. | 8 | 13 49 | 326 |
| 22 | Th | Sun's declin. 20° 16' s. | 29.930—29.899 | 48—40 | S.E. | — | 33 7 | 0 4 | 58 0 | 9 | 13 33 | 327 |
| 23 | F | Grey wagtail comes. | 30.007—29.943 | 47—37 | S.E. | ·02 | 34 7 | 11. | 6 2 | 10 | 13 16 | 328 |
| 24 | S | Peach leafless. | 29.959—29.905 | 52—40 | E. | — | 36 7 | 58 3 | 14 3 | 11 | 12 59 | 329 |
| 25 | Sun | 25 SUNDAY AFTER TRINITY. | 29.920—29.884 | 45—36 | E. | — | 38 7 | 57 3 | 24 4 | 12 | 12 40 | 330 |
| 26 | M | Oak leafless. | 29.823—29.560 | 54—38 | S. | ·26 | 39 7 | 56 3 | 35 5 | 12 | 12 21 | 331 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 47.7° and 34.5° respectively. The greatest heat, 59°, occurred on the 21st, in 1833; and the lowest cold, 9°, on the 23rd, in 1858. During the period 120 days were fine, and on 111 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

Asparagus, another bed to be prepared about the end of the week, if a succession is required. The frame when planted may remain covered up night and day during cold weather until the heads begin to appear. *Celery*, it is advisable to take advantage of every favourable opportunity, to earth up all that require it. If done when wet it will afterwards rot in a very short time. *Herb-beds*, if they are not yet cleaned and done up for the winter, they should be attended to without delay; lay a slight coat of rotten dung over them, to prevent the roots from severe frost and to enrich the soil. *Lettuce*, the cabbage varieties, in frames, intended for winter use, will not require much air if the soil is light and dry. If they require a little water, give it to each separately from a watering-pot without a rose. *Sea-kale* and *Rhubarb*, when there are no pits adapted for forcing them, let a quantity of each be covered over with pots, wooden boxes, or hooped over with rods and fermenting materials placed round them. Leaves are preferable to any other, but where there is not a sufficient quantity to produce a gentle heat, some warm dung may be mixed with them. If only leaves are used they will require to be covered with some long dung to prevent them from being blown about the garden by the wind. Before covering them a little leaf mould, tan, or cinder dust, should be placed over the crowns of the plants. *Spinach*, when gathering the leaves avoid treading on the beds as much as possible. If the ground becomes consolidated, it should be loosened up with a fork. Stir the surface of the soil on dry days among growing crops, as Cabbage, Spinach, &c. Get all vacant ground manured, trenched, and ridged up as quickly as possible in order that it may be exposed to the influence of the winter.

FRUIT GARDEN.

When trees are infested with moss or lichen, dredge them well in dull, moist weather with soot and dry wood-ashes, a few dressings will remove these pests. Fig trees should have dry fern leaves or spruce boughs nailed over them, to prevent injury from frost, or to unnailed the branches from the walls, to tie them in bundles, and to bind thick haybands around them from bottom to top. Let all superfluous nails be drawn from wall trees, and proceed at every favourable opportunity with pruning and nailing. Some gardeners postpone the pruning of trees on a south wall to the end of January, as by pruning them now they consider that the buds are apt to become unseasonably excited.

FLOWER GARDEN.

We again advise all who either intend or have commenced alterations and improvements, to lose no time in getting on with the work, as a more delightful season for performing these operations could not be desired. The present is also a favourable time for taking up and planting Box-edgings, and for correcting any uneven places on the lawns or pleasure-grounds, by taking up the turf

and relaying it. Remove all leaves and rubbish to a convenient spot out of sight to decompose. Fuchsias and other choice plants in the borders intended to be protected for the winter by slightly covering them, &c., should be seen to at once. Take up and store Marvel of Peru, Dahlias, *Salvia patens*, if not already done, and finish planting bulbs and Anemones. Take up the roots of *Lobelia ignea*, *splendens*, *propinqua*, *fulgens*, &c., and store them in a frame or in boxes, filled in with earth to be protected during the winter, and to be parted in the spring.

GREENHOUSE AND CONSERVATORY.

Cut back or closely tie in the summer-flowering twiners, so as to afford the plants underneath every possible ray of light. The directions lately given will for the present suffice, only be careful to keep out frost, and, if possible, without the use of fire heat.

FORCING-PIT.

The pots of plants lately recommended for forcing, to be plunged in tan, leaves, or any other fermenting material that will produce a gentle, kindly bottom heat, the plants to be syringed occasionally on fine mornings with tepid water. Fire heat to be applied principally in the daytime, and at night very cautiously or not at all, according to the state of the external atmosphere. The pit to be shut up early, and frequent but moderate fumigations of tobacco smoke to be given to destroy the green fly.

PITS AND FRAMES.

In fine weather when the lights are off, look carefully over all the free-growing plants, and pinch off the tops of the shoots, to keep them dwarf and bushy; also, remove dead leaves, give air night and day while the weather is mild, keeping the plants moderately dry at their roots. Cuttings, put in late to be sorted, the rooted cuttings to be removed to some place where they would have more air to harden them off, and those not rooted to be returned to heat until they have rooted.

W. KEANE.

CHRYSANTHEMUM SHOW AT THE CRYSTAL PALACE.—15TH NOVEMBER, 1860.

TEN days at least too soon for this late season: neither here nor at Stoke Newington this week could the Chrysanthemums be got up to the usual strength of numbers. None but the very early kinds were fully out; but the season does not seem to have hurt the flowers in the smallest degree.

In the collections of cut flowers one could see many of the kinds much below the usual size; but that must have been from cutting them from plants just coming into bloom; the large early kinds were as good as they have ever been—such as the Queen of England, Yellow Queen of England, Beauty, Alfred Salter, Princess Marie, Dupont de l'Eure, Novelty, and Aregina: of these Novelty is the largest of them all, and the largest of the whole family, supposing them to be up to time. I have seen Themis,

Hermine (properly Hermione), Plutus, Pio Nono, Anaxo, and such middle-season flowers almost as large again as they were shown this week. Prince Albert was the best kind for a specimen plant there, and the most telling at a distance. Christine was the most variable in the shade of colour—some a rich pink, the best style of it, and some at other degrees of light, lighter, lightest; and there was an excellent buff-red new sport from it, named, too liberally, Golden Christine.

Among the Pompones, Mrs. Dix and Golden Cedo Nulli were the two greatest strangers. The seedling plant of Mrs. Dix I described three years since from Mr. Salter's collection; it is a gem of a plant for a specimen, and the Golden is just as good as the old Cedo Nulli, which is this season deeply tipped in the centre, like as it comes in the open air. Helen (not Hélène) and Duruflet should not be shown together in the same collection; both of them vary in their tints, and often look much alike. Général Canrobert is the best yellow Pomponé; but I think one called Ida, which I saw untrained at Mr. Bird's, would tilt the Crimean hero. If you are buying from Mr. Bird just ask for this Ida, and prove the point for us all, as I have more than I can well manage.

Mr. Wiggins is the best trainer in England of flat or squat Pompones; he has attempted the upright move with the large kinds now for the first time, and is just as far from the mark. The pyramidal mode of training Pompones is by far the most telling way for a conservatory or show-house. Standard Pompones do not show so well at exhibitions as in a conservatory, where they are most useful, as they need take up no room. Mr. Williams, the in-door manager of the Crystal Palace, has lots of Pomponé standards all over the crystal fountain basins without losing an inch of room by them; but the beauty of them is to come. These standards will go on improving for the first six or seven years, and last as many more after manhood. There was one standard from him of Bijou de l'Horticulteur two years old, two feet high in the stem, and two feet diameter of head, with blooms freer and finer than from a yearling. I had lots of standards of large and Pomponé kinds as long as I had room for them, and for private use at least they were fully as good the third season as bush plants. All gardeners in the country want "starers" or standard flowering plants when they are "setting" their conservatories, and this move is a good addition for them at a critical season.

There were only two collections of pyramidal Pompones. One from Mr. J. F. Bennett, Carisbrook Villa, Tulse Hill; the other from Mr. Monk, gardener to C. J. Heath, Esq., Balham, who took the first prize. The best in the first of these were Golden Cedo Nulli, Duruflet (the best), and Helen: these three seem the best for training flat or any way. The best in the second collection were Requiri (very fine), Golden Cedo Nulli, and Helen again; but Adonis and Général Canrobert, though dwarf kinds, got up well. My rule for pyramids would be double the diameter to be the full height up to five feet, at which any diameter over three feet I would allow; but here I contemplate a handle of a few inches of bare stems at bottom, and the same framework of plant for years as with standards.

The single-specimen class for Pompones was not quite so good as the collections, no "specimen" being better than any of the plants in Mr. Wiggins' lot.

Collections of six kinds of Pompones, single stems. Here is where the battle was fought; and Mr. Wiggins came out the victor and the champion of the day. He also placed his plants better for effect than ever he did—Adonis and Helen being at the extremes, Cedo Nulli and Général Canrobert in their stalls, Dr. Bois Duval and Andromeda the same. Andromeda is a fine new sort to the shows—a sort of creamy colour after Comte Achille Vigier, which it will supplant: these were admirably done on the flat system of training. Mr. Weston, gar-

dener to E. Martineau, Esq., Clapham Park, was next with smaller plants, and the names badly spelt, very bad—as Drine Drine for Drin Drin, Dr. boieis for Dr. Bois Duval, Ceodnella for Cedo Nulli—a disgrace to our calling, but he had the third prize. The second was won by Mr. Weston with Cedo Nulli, Helen, Drin Drin, La Vogue and Giraldo (a blush white). Nurseryman's share of this run went to Mr. A. Forsyth, Nursery, Stoke Newington, who had a fine plant of Mrs. Dix for the first time. Golden Cedo and Cedo Nulli, Général Canrobert, Helen, and Duruflet—two which come too near to each other to be both seen in a six-plant collection in a family of sixty kinds and more to choose from. That finished the prizes on one side of the transept.

In the centre of the open space stood, under a standard *Camellia variegata* in bloom, the first of the first class of six large *Chrysanthemums*, single stems; and they were large and no mistake, splendidly grown and bloomed by the victor on the right—Mr. Wiggins. He ought to have had the five-guinea prize for such a fête, but he spoiled them in the training. They might be said to be tied like a birch broom each of them, and he was only third best with the best plants—splendid kinds, as Princess Marie, (bundled up like a sheaf of Barley), Annie Salter, Cassandra (very good indeed), Cloth of Gold (not quite out, and no gardener in fifty can manage it so well), Christine (very good), and Aurora (a light buff). The first in this first class was Mr. David Hutt, Hackney Fields, and he did train his plants to some purpose. His Golden Christine, the newest, was a splendid evidence of the value of the kind; Chevalier Dumage (one mass of golden yellow), Defiance, Voltaire (a red), Annie Salter, and another splendid new one, Dr. McLean—all trained to bloom from the edge of the pot, and all legitimately stood, each respectively, on one single leg or stem. Mr. George, gardener to J. Nicholson, Esq., Stamford Hill, was second with dwarfer plants, and, if anything, better training. His Prince Albert was a model of good gardening, good training, and good kind to work. What a glorious flower it is, and how dark! But wait till you see Negro Boy done that way. Insigne (very fine), Aregina (which none of them spelled right, darker than usual), Vesta (remarkably well trained for effect, blossoming below the rim of the pot), and Madame Camerson (as trim as of old, not having seen her madamship from home for the last fifteen years). In this same class Mr. Monk and Mr. Hook had each a fourth prize—a tie. Mr. Monk having excellent culture loosely set off, and Mr. Hook as trim and prim as a Poppy, with less ambition in his style of growth. Albin, Aurora, and Alfred Salter were the best in Mr. Monk's. Mr. Hook had Golden Christine, a buff, however; Christine itself very light; Queen of England, and Gem as his best. Mr. Forsyth, of Stoke Newington, sent lots of sorts for furnishing, and not for competition: the best of them were Prince Albert, Defiance, and Aregina, rightly spelled at last. But his great luck was in a new sport he had, for which he got a prize. It was a strong, upright plant of the light blush Trilby which turned to yellow, just as the Queen of England recently turned, and this will be as valuable a run from Trilby as the yellow was in respect to the Queen of England. Mr. Forsyth was also the winner of the nurseryman's first prize in the first class of six plants, and an extra one in the same.

In the single-specimen-on-single-stem class there were five competitors, but their plants again were not finer or so fine as some in the collections; the kinds were neither different, and need no telling.

Let us turn to the grand contest of the day—the twenty-four cut blooms collection, and the collection of six cut kinds and six blooms of each of the kinds. The secrets of the craft come out there; but as I promised to tell how Mr. Bird does them with his own consent, just learn that he took the first prize with the twenty-four cut blooms, and the first prize for the six times six blooms of

six different kinds; and if I tell the kinds which he and his competitors staged, I shall not be far from the mark of telling all the best cut blooms there, and the glory of the tournament among private knights of the order will be got in the schedule of prizes.

These cut blooms were arranged in three rows, eight kinds in a row—and I shall read them off from left to right, beginning at the back, and here is how Mr. Bird placed them: 1, Alfred Salter; 2, Dupont de l'Eure; 3, Beauty; 4, Novelty, the largest of them all, and lighter than Queen of England; 5, Themis; 6, Queen of England; 7, Cassandra, a delightful specimen; and 8, Princess Marie—these the eight primers in the back row. The middle row began No. 1, Marshal Duroc; 2, Lucidum; 3, Alarm (dark red); 4, Formosum; 5, Madame André; 6, Anaxo; 7, Madame Lebois; and 8, Duke. The front row ran thus: 1, Nonpareil; 2, Trilby; 3, Plutus; 4, Stellaris Globosa (very fine); 5, Yellow Formosa; 6, Miss Kate; 7, Madame Mieliez; 8, Fabius, that very peculiar colour of orange and fat of salmon. These were indeed splendid; and the next from Mr. Wilkinson, of Old Ford, Bow, were not very much behind, except in the enormous size of some of the kinds. He, too, began his back row with Alfred Salter, then Lisias, Goliath, Dupont de l'Eure, Cassandra, Aregina (fine), Novelty, Queen of England, Marshal Duroc, Duke, Versailles Defiance, Alarm, Léon Lequay, Beauty, Madame André, Madame Lebois, Plutus, Fabius, Hermione, Stellaris Globosa, Yellow Formosa, Curtius Quintus (not Quintus), and Nonpareil. Mr. Forsyth was third in these twenty-four, the kinds being much the same. Here Alarm and Aregina were in combination, or two of a caste making one dark red colour; Queen, Beauty, Lucidum, and Alfred Salter the four largest, and so through ever so many collections. The first amateur in the twenty-fours was Mr. J. Paxton, gardener to Mrs. Browning, Green Lanes, Stoke Newington; his largest were Queen or Queen of England, Beauty, Novelty, Alfred Salter, and Saccoa Nova, Plutus; Cassandra and Lucidum were his next best. Mr. C. G. Wortley, Stoke Newington, was second; Queen and Beauty were his largest; Alarm and Aregina, two birds of a feather, next best; Nonpareil, Pio Nono, Formosum, and Madame André next. His Miss Kate was splendidly done. Fabius was his most out-of-the-way colour; and Curtius Quintus (again Quintus) the next shade to Fabius, and he was a Roman and so was Curtius Quintus, both household words with school-boys.

Here Mr. Clark, of Brixton, introduced a superb breed of Chinese Primroses, some dozens of well-bloomed plants; and there were half a dozen of the best-looking Dahlias you ever saw; and it was not till I handled them to find their names, that I discovered they were artificial, and I learned they were made out of French paper. Thinking it the easiest thing in the world to take a prize with such Dahlias at the Floral Committee next year, at Kensington Gore, I hunted out the lady who makes them, to give her an order for such like. I found her in the Fine Arts Court, her name is Mrs. Jas. Stodart, she declares there is no magic in making and passing off such flowers for real nature, no more than scissors, thimbles, needles, &c. If I do not take in some of the first-class florists with some of Mrs. Stodart's best make, and get a first prize for them, I shall tell you.

The next in order are the six-times-sixes, and there were the first-prize ones of Mr. Bird's—six Novelty, six Princess Marie, six Cassandra (a very light blush and picoteed all over by his way of doing it), six Dupont de l'Eure, six Marshal Duroc, and six Stellaris Globosa. This was open to all, but there was only one rival, and he was most creditably up to the mark of the second prize, Mr. C. G. Wortley, of Stoke Newington. His were six Queens of England, six Beauty, six Dupont de l'Eure, six Formosum, six Plutus, and six Miss Kate, and Miss Kate again the best-dressed lady at the exhibition.

Next was Mr. Salter's new seedling, Lady Hardinge, had a second prize; and the men of the east and of Stoke Newington shook their heads and said there was no mistake about Lady Hardinge.

Another prize to Mr. Bird for his Lady Mayoress hybrid Pompon; mentioned in the report of his nursery. His Garibaldi seedling was there also; and there were two lots of those horrid bull's-eye looking flowers which some people can look at, but which are only fit for rock-work or wilderness plants.

There was a first-class certificate to Mr. Forsyth's Golden Trilby, which it richly deserved; and there were two most artistic designs, or devices as they call them. The one a fac-simile representation of the Rose Mount at the Crystal Palace, exceedingly well executed, and very fairly planted. The other was a one-sunk-panel terrace garden, with raised green banks and walks all round. All the beds in the panel were true to the art of terrace gardens, and well planted. The Rose Mount was by Mr. Varney, gardener to W. Smith, Esq., Upper Norwood; and the terrace panel by Mr. Cranwell, gardener to R. Pulling, Esq., Penge; and both had prizes for their work, and richly deserved them if you could compare their work with some of the wretched caricatures on designing which used to disgrace our old shows.

D. BEATON.

List of prizes awarded:—

Six Plants, distinct varieties, on single stems (amateurs).—First, D. Hutt, Hackney Fields. Second, J. George, gardener to J. Nicholson, Esq., Stamford Hill. Third, J. Wiggins, gardener to E. Beck, Esq., Isleworth. Equal Fourth, J. Monk, gardener to C. J. Heath, Esq., Balham Hill; J. Hook, gardener to A. Rose, Esq., Stamford Hill.

Six Plants, distinct varieties, on single stems (nurserymen).—First and Extra, A. Forsyth, Nursery, Stoke Newington.

Single Specimens on single stem (open to all).—First, A. Forsyth, Nursery, Stoke Newington. Second, D. Hutt, Hackney Fields. Third, J. Hook, gardener to A. Rose, Esq., Stamford Hill. Fourth, J. F. Bennett, Upper Tulse Hill.

Single Specimens on variety of stems (open to all).—First, A. Forsyth, Nursery, Stoke Newington. Second, J. George, gardener to J. Nicholson, Esq., Stamford Hill.

POMPONES.

Six Plants, distinct varieties, single stems (amateurs).—First, J. Wiggins, gardener to E. Beck, Esq., Isleworth. Second, J. Weston, gardener to E. Martineau, Esq., Clapham Park. Third, J. Hook, gardener to A. Rose, Esq., Stamford Hill.

Six Plants, distinct varieties, single stems (nurserymen).—First, A. Forsyth, Nursery, Stoke Newington.

Single Specimens (open to all).—First and Extra, D. Hutt, Hackney Fields. Second, J. F. Bennett, Upper Tulse Hill. Third, J. Wiggins, gardener to E. Beck, Esq., Isleworth. Fourth, C. G. Wortley, Church Street, Stoke Newington.

PYRAMID POMPONES.

Six Plants, distinct varieties, single stems (open to all).—First, J. Monk, gardener to C. J. Heath, Esq., Balham Hill. Second, J. F. Bennett, Upper Tulse Hill.

CUT BLOOMS.

24 Cut Blooms, distinct varieties (amateurs).—First, J. Paxton, Green Lanes, Stoke Newington. Second, C. G. Wortley, Church Street, Stoke Newington. Third, E. Sanderson, 31, Stanhope Street, Regent's Park. Fourth, J. George, gardener to J. Nicholson, Esq., Stamford Hill.

12 Cut Blooms, distinct varieties (amateurs).—First, J. George, gardener to J. Nicholson, Esq., Stamford Hill. Second, E. Sanderson, 31, Stanhope Street, Regent's Park. Third, J. Paxton. Fourth, C. G. Wortley, Church Street, Stoke Newington.

24 Cut Blooms, distinct varieties (nurserymen).—First, J. H. Bird, Nursery, Green Lanes, Stoke Newington. Second, J. Wilkinson, Nursery, Old Ford, Bow. Third, A. Forsyth, Nursery, Stoke Newington.

6 Cut Blooms, distinct varieties (open).—First, J. Wilkinson, Nursery, Old Ford, Bow. Second, E. Sanderson, 31, Stanhope Street, Regent's Park. Third, J. Monk, gardener to C. J. Heath, Esq., Balham Hill.

12 Cut Blooms, Anemone Pompones (open to all).—First, C. G. Wortley, Church Street, Stoke Newington. Second, J. George, gardener to J. Nicholson, Esq., Stamford Hill.

6 Varieties, 6 Blooms of each variety (open to all).—First, J. H. Bird, Nursery, Green Lanes, Stoke Newington. Second, C. G. Wortley, Church Street, Stoke Newington.

Best Device in Cut Blooms.—First, T. Varney, gardener to W. Smith, Esq., Upper Norwood. Second, J. Cranwell, gardener to R. Pulling, Esq., Penge.

SEEDLINGS.

First-class Certificates of Merit were awarded to Mr. Salter, Versailles Nursery, Hammersmith, for "Lady Hardinge;" Mr. J. H. Bird, Nurseryman, Green Lanes, Stoke Newington, for Hybrid Pompon, "The Lady Mayoress."

A First-class Certificate of Merit was awarded to Mr. A. Forsyth, Nursery, Stoke Newington, for "Golden Trilby, a sport from Old Trilby."

PLUMS.—On Friday last fifty tons and upwards of this fruit were despatched from Pershore railway station to Birmingham, Manchester, &c.

but to get the tips, as in *Hermione*, the same mode of treatment is necessary.

Dr. McLean, another two-year-old, is the best of them all for show-specimens, the habit is so good. The flower is also first-rate, incurved of course, and of the liveliest rosy purple.

Madame Clos, a rosy violet of the same age, and not quite so good a flower as the last, is yet as valuable for making a specimen for the shows or for a conservatory. And Prince Albert, the large, dark crimson, as they say, is on a par with Madame Clos and Dr. McLean for a pot specimen. It is gratifying to be able to tell country cousins of kinds which will thus do credit to their pot culture, and the tendency is increasing.

In addition to a first-class certificate, by universal accord, at the Floral Committee the other day to Mr. Salter for Lady Hardinge, another seedling by him had a certificate, on the strength of that tendency to form bushy plants which flower down on the branchlets.

White Globe, a splendid large flower with incurved florets, but only next-best properties. Miss Ket, though now of a certain age, is a dear little thing to those who admire colour and goodness in a small compass: where is there such another shade of lilac in the family? Madame Gordereau, Anemone-flowered, white outside, and a sulphur centre "as large as your fist" when properly done. Antigone, a fine, soft white. Marshal Duroc, one of the very best shaped by Nature, and a splendid bloomer with rose and lilac, but requires a particularly good soil and treatment to see it at the head of the staff. Madame Lebois, finer than I ever saw it; a first-class flower, of a most pleasing pink outside, fading into straw colour towards the centre, and very large. Dupont de l'Eure, the largest ever seen of the kind, the best shaped by Nature, and the most easy to do first-rate with second-rate means: we have no name for this mixed colour of rose, buff, and carmine. The old Lucidum, six flowers on a small stem, such as no dresser could imitate—verily the proper culture is half the battle. White Beauty, a sport from the old peach-coloured Beauty, and quite as good, and as flat and as much across: every floret of such as these, and of all that are of the habit of Madame Poggi, would need to go through the curling-tongs to get them up to the natural standard of such as Dupont de l'Eure—more is the pity they should be so disfigured. Anaxo, still a first-class flower of peculiar shade of light orange red. Triomphe du Nord, a most extraordinary flower in size, colour, and shape; a true recurved flower, dark Indian red, with a dash of Anaxo in the centre. An old, recurved flower, Madame Poggi, has thrown a sport this season, every flower of which is incurved and stands upright, the colour the same as the original. Quintus Curtius, a very large flower of a peculiar colour, the fat of salmon tint, incurved, and rather new. Beauté du Nord, in the way of Alma and Alarm, but not so high up in the centre as Alarm. Garibaldi, a fine purplish-lilac seedling, which is coming out in the spring—a compact, well-shaped bloom. Dragon, a very strong seedling, with flowers nearest to crimson: and a third seedling, called Mayoress, a hybrid—or half large, half Pomponne size. This is of perfect form by nature, very fine to bloom, and will be one of the improved growers for specimen plants: it is a pure white, tinted like *Formosum* in the centre.

In the subjoined lists the descriptions are given only to those flowers which are under two years old from the first nursery sale of them to save room. Besides, it may be advisable to make a revised list at the end of their season, when the whole will be described in the lump.

The best six kinds of large Chrysanthemums, out of twenty new sorts, which were sent out last spring by Mr. Bird for the first time:—

Alarm, a fine, rich crimson flower, with long incurved petals, rising high in the centre as if it were a dressed flower.

Negro Boy, a very large flower of the deepest dark red, approaching to dark crimson, with a rich metallic lustre. The petals are long, wide, and incurved. Mr. Bird says this is the darkest yet known.

Novelty, apparently a seedling from Goliath, which it eclipses in all the parts and properties of a first-class flower. It is the largest flower in the family, is up in the centre like a dressed flower. The colour is a light shade of French white, with the bottom or outside petals of a deeper tint. Mr. Bird describes it fairly as "forming three-parts of a cricket-ball." A noble thing.

Sacoca Vera, a most beautiful, large, lilac, incurved flower. The name seems a misreading of the well-known tally, *Sacoca Nova*. M. Sacoca was a celebrated Italian raiser of *Camellia* seedlings twenty-five years back. If Mr. Clark, the raiser of these fine

Chrysanthemums, should see this he will favour us with the proper entry for the stud-book.

Yellow Perfection, a noble flower well named, a seedling from Plutus, probably. Plutus was the fabled king of the nether world, and, hitherto, he will only hold the second rank in this among the yellows. Mr. Bird says any stand of flowers for competition will not be complete without this gem of a flower.

Alma, a fine, rosy purple, incurved flower, which is as good as the best of the old kinds in its tint; but only a second-rate sort as compared with the five preceding ones.

The best out of all the kinds which were sent out in 1859:—
Golden Queen of England, shape, size, and substance as in Queen of England.

Cassandra, a fine, incurved White; one of the few that have tipped florets.

Fabius, large, incurved, bright orange and salmon flower.

Prince Albert, large, dark, fine for pot specimen.

Dr. McLean, rosy purple, like the Black Hamburg Grape. This will be the gardener's friend.

The following old kinds have all first-rate qualities in the estimation of Mr. Bird:—

Aimée Ferrière, Alfred Salter, Anaxo, Aregina, Beauty, White Beauty, Delight, Duke, Dupont de l'Eure, Formosum, Hermione, Lucidum, Madame André, Madame Poggi, Madame Lebois, Marshal Duroc, Nonpareil, Plutus, Princess Marie, Queen of England, Triomphe du Nord and Vesta.

The following are the next best according to the same authority:

Alma—rosy purple of 1860, Madame Clos—aforsaid of 1859, and White Globe—ditto then; Albin, Annie Salter, Beauté du Nord, Christophé Colomb, Comte de Morny, Madame Boucharlat, Miss Kate and Themis.—D. BEATON.

SCARLET GERANIUMS SPOTTED—CAMELLIA LEAVES DISEASED.

WHAT shall I do with a quantity of Scarlet Geraniums that have white spots on the leaf like the enclosed? My first impulse was to cut them down to the old wood (they are lifted plants) and scar the wounds with *stick caustic*.

On the under side of some *Camellia* leaves I find a moist, soot-like spot. It rubs off with the sponge; but what is the cause of it? *Candidissima* comes in for the greater share. I think it must be an exudation from some insect, but I cannot find any.

I have raised a number of *long* Verbenas and treated them as recommended the other day, and they have never flagged a leaf.—H. B.

[When your Scarlet Geraniums begin to grow next spring, just top them and no more, unless you want cuttings, and you will get rid of the disease of yellow dots—it is not at all formidable, but your *Camellias* are under the sway and influence of the most deadly enemy to them, and to the like of them—the dreadful thrips. Three or four good smokings of shag tobacco, as many waterings after each, and after that a thorough sponging to the under side of all the leaves, are the best means of cure at this season.]

ORCHARD-HOUSES.

THERE is something very good in many of I. R. Pearson's remarks on "orchard-houses" at page 76; but his charge against lean-to houses is too sweeping. Had his experience reached the northern, or some of the colder midland counties, he would have found his favourite span-roofed houses, even if built substantially of brick, wood, and glass, would not answer in all localities one season out of five, without fire heat in spring to prevent the fruit-buds being injured and often wholly destroyed by frost; and in cold and late summers fire heat would be required again in the autumn to ripen the fruit.

I know from experience that to insure a crop of well-ripened fruit in many parts of England, an orchard-house to succeed without fire heat must be a *lean-to* against a brick wall. The advantage of a house of this description is apparent in early spring on sunny days and frosty nights, especially if the back wall is of dark-coloured brick, which attracts the heat of the day, and retains it in some degree through the night, at least sufficient to keep out frost; whereas in a span-roofed house the frost would enter and often destroy the crops. The same remarks refer to cool vineries.

"I. R. P." is, also, too rash in recommending an unlimited supply, or rather a dose once a-week, of manure water as thick as can well pass through the pipe of a common watering-pot. This is what few would dare to practise. Well-diluted manure water, used once or even twice a-week, is safer and better.

"I. R. P." also condemns Pears and Plums for orchard-houses. Here again he shows his southern origin. We in the north cannot grow and ripen the finest sorts of Pears and Plums, except by growing them against a south wall (where they often fail) or in an orchard-house; and if the trees in pots are removed to the open air to ripen their fruit, this will be found as good and eatable as any wall fruit, and often much superior.—B.

VERBENAS AT PILSBY NURSERY IN THE PAST SUMMER—GAZANIAS.

THE past has been the most fearful season for Verbenas I ever experienced, or, perhaps, than any other man has experienced from the day when Mr. Bevis first raised *Melindris* to the present. So many failures have there been, so many refusing to grow; others having such stunted hidebound growth that no cuttings could be obtained; others would not bloom at all, as the following will show.

Our collection consists of about two hundred varieties, and they were all planted out and treated alike as to soil, aspect, &c. I will begin with the older varieties and general favourites. *White's Perfection*;—this name was a misnomer; in growth and bloom it is condemned, and thrown away. Poor Mrs. Holford, what shall be said of her? Treated to a new, well-made bed, and everything done to coax her to put on her best dress was of no use; she was not well, and would not. Once we thought she tried, but she said (by her growth) "it was no use, she could not stand the cold." *Snowflake*;—why, Messrs. Low must surely have gone to Mont Blanc, and found it there, or else to Siberia; for snow it is for whiteness, and cold it must love to do as it has done this season. It is the best white, without doubt. Grow no other for massing, if you can help it, is our advice. *Blue Bonnet*;—once put it on, and we had a look at it, but the cold wind blew it over, and we saw it no more this season. *Purple King*, or *Matchless*—for there was no perceptible difference between them—was truly named, it was king of all for general purposes; even now (November) it wears the purple dress. *Domvilliana* would not show in the race its bluish-purple. *Leviathan*, that monster, kept in the depth below; for we had not a sight of him. *Reine Blanche*;—her skin and constitution generally are much too delicate for out of doors; she is for the house only. *Prima Donna* said she was not at home, except on the stage; her glories were not for us at present. *Lady Cotton Shepherd* and *Miss Fowke*;—both near alike, very bold and strong in constitution, and not above showing themselves among their rivals. Lord Elgin said the climate was too cold, and went off with his suite. *Il Trovatore*;—whatever the grand opera may be, there was nothing grand about the *Verbena*. *Miss Trotter*;—poor little thing! was never very strong, and this season she is worse than ever; she is too consumptive for many places. *Silvie Gladly* made a vigorous push, and obtained a good place with her cherry eye, looking very bright; but what is to be said of *Defiance* (Robinson's)? From the time it came hurling defiance (in 1848, I think,) from the banks of the Thames he never has cut so wretched a figure as this season; he was small and dirty, and had no brilliancy about him; while Mrs. Woodroffe determined, this season at least, to show her charms and eclipse her rival. *Nero* was a good deep rose, and looked cheerful and warm. *Striata Perfecta* rose up boldly, as if determined that her lavender and white stripe dress should be admired; while *Madame Jourdier* said she would show her scarlet and rose stripes only when the sun shone; but *Bacchus* said that it was not likely he could cheer the eye (not the heart) when there was no sun to ripen the Grapes. Lord Raglan did not mind in the least: whether in the sunny south or cold Derbyshire he would do his duty and do it well.

I am sure the whole of the readers of *THE COTTAGE GARDENER* who take interest either in any new, or, if as old as the hills, the resuscitation of a really good and useful plant from its quiet sleep into life and activity, must feel indebted to our friend Mr. Beaton for having at last settled the godfatherhood of the *Crystal Palace* *Scarlet Geranium*. But I must tell him we have had sent us here, from a clergyman lately, a *Scarlet* which

he assures us surpasses all the other *Scarlets*. But he does not know whether it is identical with *Crystal Palace*; but it is like many other good things (to use the words of a contemporary) from *Shrubland*, for such is the name we have with it. Next year will tell; but if it surpasses all others, as we are assured it does, why then Smith's *Vivid* will be of no use, and must fall into the shade. Our north-country friends over the border say *Vivid*, *Vivid*, and none but *Vivid* for our beds. *Tom Thumb*, *Crystals*, or *Trenthams*, are of no use beside it. We shall see what they say in 1861.

Really, I should be sorry to take the bread out of Mr. Beaton's mouth, for the right man is, we all know, in the right place; but should I live to see the *Lavender* fields of my native place, I will try and reach *Surbiton* and show him that I am not the man to eat his crust; for, I suppose, I could reach now by rail without going through that long coomb-warren, when I should see the stoves from all parts, and get from our valued friend some useful lessons.

I see your correspondent "R. F." at page 75, has misread my note at page 46 concerning *Gazania splendens*. I distinctly said, that at the nursery where I saw the bed mentioned in that article, they had been growing for some time *G. splendens* under the name of *rigens* and did not know it; and to prove that, if "R. F." will, through you, forward me his address, I will prove that *G. splendens* has been so growing by sending him a plant of each—one of Messrs. Henderson's variety, and one of the variety alluded to. I will also send him one of another kind I obtained from a nobleman's garden, sent for *splendens* from a provincial nursery in the north, but which is not *splendens* or *rigens*. I secured some of it, and purpose growing it by the side of *splendens*, and, indeed, all the varieties of *Gazanias* I can obtain under the names they are called. I will also send to the Editors one of each, as I have them, if they wish.—[Pray do.]

G. rigens (true) was grown some twelve years since by Mr. Bevis, when gardener to S. Gurney, Esq., at Carshalton, and I have no doubt it might still be found there; or, perhaps, if this meets his eye he will take up his pen and tell us if he has it still in his retirement at Teddington. He could, if he would, tell us of many a good thing which would make good plants for bedding in the present day, although, like *G. splendens*, not known by young gardeners. In conclusion I will only say, I shall be glad to receive a plant of *Gazania uniflora*, or any other kind, for the purpose I have before mentioned.—*Pilsby Nursery, near Clay Cross*.

GISHURST COMPOUND FOR ORCHARD-HOUSE TREES.

THAT strong solution of Gishurst, so much recommended for orchard-house trees when put to rest, is a dangerous application. I tried it this time last year, and killed about half the buds (both wood and blossom) on *Peach* and *Nectarine* trees; the destruction of the buds was not apparent till the spring, when they remained dormant instead of expanding, and finally dropped off.—T. S. B.

[Are you quite sure that the buds dropping was not occasioned by the red spider? If this sap-sucker prevailed in your house, the injury arose from them. Are you sure that the unexampled frost we had this time last year had not something to do with killing the wood?—EDS. C. G.]

FORCING.

(Continued from page 90.)

FLAX refuse from Flax-mills, with but little preparation, yields a strong lasting heat. Sawdust from all kinds of wood, brought from the sawpit when rather dry and thrown into a bed at once, yields a mild heat for a long period, and as it decays may be burned or charred; and anything and everything about a garden—such as clearings of quarters of Beans and Peas, as well as all that can be got from the flower garden—when frost comes, if not worth taking to a charring-heap, may be used successfully, for the heat they are capable of giving before they are thoroughly decomposed. Where there is a determined will, a way will not be far off. I have seen good Cucumbers in the middle of May that had not much else to keep them in the way of heat except the *Nettle* stems, long grass, and tree leaves, collected in the ditches, by the sides of roads, and lanes, and partly carried and partly wheeled home.

MANAGEMENT OF FERMENTING MATERIALS.—The preparing of the fermenting material above noted, has reference chiefly to the plan of placing that material inside a frame or a pit, so as thus directly to influence by their heat the plants placed above them. This is the thriftiest way for getting the benefit of the most of the heat. One barrowload thus placed inside will have more influence upon the plants than half-a-dozen placed as a lining round the outsides of the bed under ordinary circumstances. If the plants grown are in pots, and the heat declines, it would be easy in a good day to take them out; protect them in a similar place or shed; turn the bed over, which would most likely be sufficient, and, if not, add a little sweet and fresh dung, &c., a foot or eighteen inches from the surface. When the plants grown are turned out into soil in the bed, then it will be necessary to add linings to the sides of the bed. If there is a chance of steam getting in, then that dung too must be pretty well sweetened; but if there is a foot or eighteen inches of soil, and that is well rammed to the sides of the frame and no cracks allowed, the steam can scarcely get access.

The reasons why linings are so soon needed in such circumstances is, that the bed is commonly made at first only a few inches all round larger than the frame; and consequently, if the outsides of the bed are not sunk in the earth or protected, they soon cool, and the atmosphere within gets too cold, even though the roots being planted in the centre may be quite warm enough. Even when a lining is given in such circumstances, the new heat must pass through dung and soil before heating the enclosed air. When using common frames for such work, if I could get material at all, I found it to be ultimately a saving of material and labour, and every way better for the plants, to make the bed so wide as to leave from eighteen inches to twenty-four inches on each side of the frame; and as I felt pretty sure there would be enough of heat in the centre, the outside on which the frame stood was generally from six inches to twelve inches higher than the middle of the bed. The atmospheric heat was the first to get too low, but not so early as in the other case; and that was increased merely by placing dung all round the frame on the top of the sides of the bed. The boards thus got quite hot, and permitted of air being freely given. I have had Cucumber-beds thus managed that never wanted the linings to be turned from top to bottom during the whole season. By some means or other whatever could be got of a fermenting matter—leaves, grass-mowings, &c., were used to keep the short linings up to the top of the frame or nearly so; and in dull days you could thus give air, and after sunny days you could moisten the boards and get a nice steam. These frames, ten inches in front, twenty at back, or a few inches deeper, were made of good deal, morticed at corners, and fastened to stout corner pieces there; and though never out of use summer or winter lasted some seventeen years without seeing a lick of paint.

PITS ON ARCHES.—Some people, considering the great waste of time in sweetening dung, and the great amount of heat lost in the process, have contrived pits built with arches on the sides, and a close floor inside of slate, stone, wood slabs, &c. to support the soil, plants, &c.; the dung being thrown into such chamber and linings at once, and there worked. McPhail's pits were a modification of this; only, instead of arches, the outside walls for half the height were pigeon-holed, and brick flues crossed the pit from back to front to allow the heat freely to pass. A cheaper and a better modification of this is to have the lower half of the wall built of four-inch, or brick on bed pigeon-holed; and three inches or so from it to have a wall tied here and there to it of brick on edge, or even slabs of slate, rising to within eighteen inches or twelve inches of the top, and covered there with slate or tiles. This wall was chiefly for giving top heat without steam. The lower part of the pit to be filled with faggots, logs of wood; better still with large stones, brick-bats, &c., to the depth of two feet and a half. No steam from the dung can enter such a pit or close frame. When appearance is no object, we would build such a pit with walls of single brick on bed, close, using cement or strong mortar made of fresh lime and good drift sand; fill the pit inside partly with stones and clinkers as above noted, and heat entirely by rough mounds of fermenting matter right up to the top of the pit, and with wattled hurdles to protect from the weather. In a place where much framing was done, the dung could be all sweetened round such a pit, removed, and other material of a fresh character supplied. Even here, however, a great deal of heat goes right into the atmosphere. Where neatness and economy of heat were alike to be combined, I would build such a pit with

nine-inch piers every eight feet for strength; fill the inside with rubble as aforesaid, having clean gravel at top to prevent soil, or dung, &c., filling up the open spaces; the stones, &c., being placed as open as possible; and from the top of the open rubble I would, in the centre of each light, place two semicircular three-inch drain pipes with the ends upright and the flat side against the wall, and take them up to within nine inches of the top, back and front, which thus would secure a healthy top heat. The outside linings we would secure with neat, wooden shutters, two feet from the top of the wall at back, and fifteen inches in front; the dung would thus be concealed, and, however it might sink, the heat arising would play against the wall and the purpose be secured until the material wanted turning or renewing.

SLOPING THE BOTTOM OF THE BED.—When beds are built above ground it is best to give the bottom a slope, similar to the frame, so as to leave the back higher than the front by a foot or so; this not only keeps the bed dry, but gives the same height of fermenting matter at front as at back, and allows the bed also to have a slope. When the bed or pit is sunk at least a half below the ground level which is desirable, this is of less consequence.

For regular ranges of pits, heated by dung, spouting should be provided to take away the water that falls on the glass, to prevent it getting into the lining, or, as in the case of frames, soaking back into the bed, thus giving a redundancy of moisture and cooling the heating matter. For frames that are moveable, nothing answers better than two slips of wood and the requisite length, and two inches and a half to three inches deep, and three-quarters of an inch or half an inch thick, nailed together at the sides to resemble the letter V. A little thick paint run along at the angle will make them watertight. We find that thick clay paint answers the purpose. These may either be fastened to the box or laid in the right direction on the top of the lining.

SECTIONS OF BEDS.—The following sections may make our meaning clearer to the uninitiated. They are all intended to represent frames or pits of six feet in width, though that as well as the height can be altered at pleasure. I have confined these to modes distinguished for their simplicity, believing they almost always answer best and with least trouble.



Fig. 1 is a dungbed made in the usual way, with or without faggots, &c., to keep it open, with a frame set upon the top of it. The dotted lines represent the linings to be added when necessary.

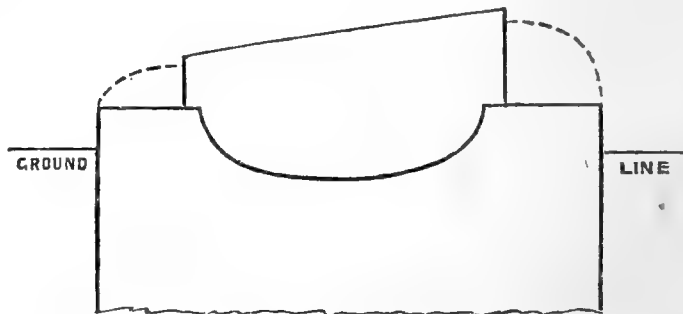


Fig. 2 shows a bed built as recommended, considerably wider than the frame, and not so high in the middle as at the sides, which gives two advantages—more room for earth, &c., and prevents so far a burning heat at the centre of the bed. These beds maintain a regular heat a long time, with the addition of the small linings at the top of the bed showed by the dotted lines. Of course, when the bottom heat gets too low, first one side of the bed and then the other is broken down, leaving enough for the security of the frame, and then the other side and the

bed are then treated as in *fig. 1*. For general purposes, such a process is not often needed.

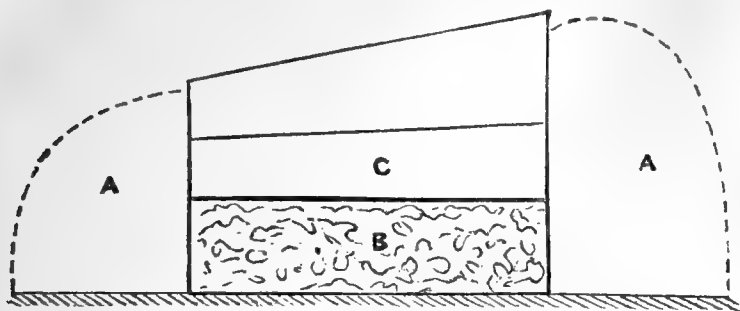


Fig. 3 shows a brick pit built of solid work and brick on bed, one brick thick, to be heated by manure brought at once from the stables, &c., and placed round the sides as at *A*. The bottom inside is filled with rough stones, clinkers, &c., placed as hollow as possible to be firm, terminates with smaller stones, and then fine-washed gravel to prevent earth or dung getting among them. *C* is designed for earth for growing plants, or for tan or sweet dung and leaves for plunging pots in.

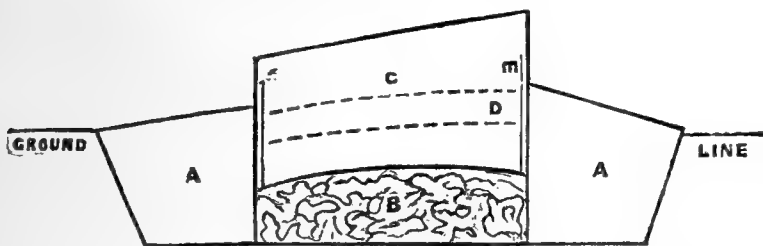


Fig. 4 is a similar pit with solid four-inch walls, and nine-inch piers for strength every eight feet, intended to combine economy in material, and neatness in appearance. *A*, is the linings for unsweetened dung, &c., covered with boarded shutters; *B*, the open sort of chamber of stones; *C* or *D*, top of earth or tan; *E*, semicircular drain pipes, placed upright against the walls at the centre of each light, back and front, and plastered at the joints. The top can be shut at pleasure; when open there will be a circulation of air from the atmosphere of the pit, through the bottom among the stones, &c., which will be a great advantage.

Had I made a *fig. 5*, it would have been merely to repeat *fig. 4*, with the inside stones, &c., all removed and filled up with sweet fermenting matter as far as *D*. The walls might be either solid or pigeon-holed at the bottom, and linings made in the usual way. I prefer, however, *fig. 4* as it is. Did I use such a pit, however, for early Cucumbers and Melons, I would have a foot or so of sweet dung and leaves, or tan, above the stones before placing the soil in, just to give the plants a good start at first, a ridge or mound of soil being placed in the centre. This, also, might be surrounded with fermenting matter, and removed as more earth was wanted. Anything may be grown in such a place if there is plenty of fermenting material. R. FISH.

(To be continued.)

TREATMENT OF AN OVERCROWDED STRAWBERRY-BED, AND OF AN OUTSIDE VINE-BORDER.

I HAVE just taken to a kitchen garden, in which is a Strawberry-bed with the plants so crowded as to present nothing but a matted mass of leaves. An experienced gardener advises me to mow it down with a scythe, and bury it four inches or five inches with rotten horse-dung until the spring. My own gardener objects to this plan. Will you kindly decide between them?

In the same garden is a greenhouse containing two Vines, the roots of which are on a raised border, about eight feet wide outside. The greenhouse will be devoted to keeping Scarlet Geraniums, &c., through the winter, and only warmed to keep out frost. Ought the outside border to be manured, and to what depth during the winter?—C. W.

[Such a bed will likely do no good after the next season. We would go over it with a knife—remove a number of the small plants, and thin the larger ones, so as to leave two or three buds, say six inches apart. Fork the bed then an inch deep or so. Most likely the buds will be out of the ground. Place a little

soil in nice, dry order round the plants, so as to cover the buds all but the points. Then place half-rotten dung in all the open spaces. You may thus have a good crop. We have seen good results and bad ones from the plan recommended.

If the roots of the Vine are close to the surface, a couple of inches of long litter will be an advantage. If from nine and more inches from the surface, and that surface is forked over, no covering will be necessary.]

THE FLUKE POTATO.

I HAVE very great pleasure in adding my testimony to that of "THE DOCTOR'S BOY" as to the excellence of the Flake Potato. I consider that, as a very late Potato—say from April to July, it is unapproachable. Farmers' Profit, Ox Nobles, &c., are not to be mentioned on the same day. In my opinion, Flukes are best off strong, close land, both in quantity and quality; and as evidence we have the acknowledged superiority of the Flukes grown on the black soils of Lancashire.

On our farm we have both light, gravelly, and clayey land; but we always grow the main crop of Flukes on the clay, even if it clashes with our rotation system. I have a peculiar pet theory as to the reason why; but the poverty of my gift of language hinders me from giving a lucid explanation. Regents are two-thirds diseased; Flukes scarcely at all.—N. H. POWNALL, Holme Pierrepont, Nottingham.

[Send us a statement of your theory, and we will undertake to made it intelligible.—Eds. C. G.]

PLATYCERIUMS AND THEIR CULTURE.

THE five species of *Platycerium* which are now cultivated in our gardens form a well-marked and most remarkable group, totally unlike anything else in the whole family of Ferns. It is now fifty years since the first species, *P. alcicorne*, "the Elk's-horn Fern," was introduced from Australia. Its remarkable appearance, and the great contrast between it and all other Ferns, made it at once a favourite, and gave it a place in every garden. Each species which has since been introduced has been more curious and extraordinary than those which preceded it. *P. stemmaria* was imported about twenty years after the first species; then came *P. grande*; and within the last few years *P. biforme* and *P. Wallichii* have been added to our list, and these are, without exception, the most wonderful Ferns of which we have at present any knowledge. Mr. Simm, of the well-known Fern Nursery at Foot's Cray, lately showed me some very young plants, which, as far as could then be seen, appeared to be distinct from either of those mentioned above; if it should prove to be a new species, which is most probable, it will make our list up to half a dozen.

The name *Platycerium* is derived from *platys*, broad, and *keras*, a horn—from the resemblance the fertile fronds bear to the broad, divided horns of some kind of elf or stag. All the species grow naturally upon the trunks or branches of trees. They produce two kinds of fronds—the so-called sterile ones clasp closely to the tree, and each new one which is made overlaps and covers its predecessor; the fertile fronds are thrown out from the centre of these, they are repeatedly forked, and droop gracefully downwards, bearing the sori on their under side in large, irregularly shaped patches. The fronds, especially while young, have a very hoary appearance, produced by an infinite number of minute stellate hairs, which form an interesting object for the microscope.

All the *Platyceriums* may be grown in pots, and this is sometimes done, though it does not show them to advantage. A better way to cultivate them is to fasten them to a piece of rough bark-covered wood with a little moss; but as they are apt sometimes to be allowed to get too dry when grown in this way, I would strongly recommend a plan I have lately employed for this tribe of plants with great success. Take about two feet of the bark-covered trunk of a tree, which should be at least eighteen inches in diameter; with a sharp chisel cut out the centre, so as to leave only a cylinder; fasten a piece of board so that it may nearly close the hole at the bottom; and then cut a hole in the side, about one-third of the way up the cylinder. Into this hole you may introduce the roots of the plant, and then fill the centre of the block with rough, fibrous peat and a little sphagnum. Hang the block up in its natural position, and the sterile fronds will soon cover it. A

plant of *P. stemmaria* treated in this way and hung over an open expansion-box, so as to be often moist with the steam rising from it, has grown enormously this summer. *Platy-ceriums* are seldom raised from spores, and, when they are thus raised, are extremely liable to damp off. As soon as they can be handled they should be attached with a morsel of sphagnum to a piece of cork and hung against the wall. The stem of a dead tree Fern may sometimes be found in large gardens, and I have found this suits admirably instead of cork or bark, if cut into transverse sections of about an inch in thickness.

P. alcicorne, the well-known Elk's-horn Fern, was introduced from Australia, and is said to be also a native of some of the islands of the Malayan Archipelago. It succeeds in a cool greenhouse, where the temperature of a frosty night falls below 40°, even better than in a stove.

P. stemmaria is found in many places along the west side of Africa; scarcely a tree can be seen about Fernando Po which has not one or more plants of it attached to its stem. It was first imported by Mr. Loddige in 1839. It may, like the last, be propagated freely by division, which is not the case with either of the other species.

P. grande.—This was introduced from Moreton Bay by Mr. Bidwill. Allan Cunningham found it growing plentifully on the trunks of *Araucaria Cunninghamii*, in the forest near Brisbane river. Its native habitat would seem to be the warmer parts of Australia and some places in the East Indies.

P. biforme and *P. Wallichii* are natives of Moulmein and other parts of India. Fine plants of these were imported a few years ago by Mr. Veitch; and Mr. Low has more recently received some enormous plants of both kinds. The fertile fronds of both of them are six or seven feet long, or even more when full grown, and repeatedly divided in a dichotomous manner.—KARL.

HORTICULTURAL SOCIETY.

FRUIT COMMITTEE.—A meeting of this Committee was held on Tuesday, Nov. 13. Mr. Rivers in the chair.

A very large collection of Apples was forwarded by C. W. Strickland, Esq., Chairman of the Yorkshire Local Committee, illustrative of the fruits cultivated in the East Riding. Mr. Reid of Sydenham, exhibited a seedling Apple, which was very similar to Golden Noble in appearance; and Mr. Richard Webb, of Reading, also exhibited a seedling dessert Apple, but neither of them was considered an improvement on existing varieties. A very large, flattened, and angular kitchen Apple, was received from J. B. Clegg, Esq., of Congleton, which was considered a valuable sort. A large collection of Grapes from the large vineyard at the Garden was exhibited. They were principally late-hanging kinds; but the only one worthy of notice was Morocco Pine—a hybrid between Black Prince and Black Morocco: it was very excellent. A collection of the new Belgian Pears was also brought from the Garden, of which Baronne de Mello, Maréchal de la Cour, and Comte de Lamy were the only varieties of merit. Many of the others in good seasons are of first-rate quality, but the late cold summer was unfavourable to their ripening. Mr. McLaren, of Cardington, sent a dish of Beurré Bosc Pears, but they were not up to their flavour this season; and Mr. Stanley sent a very fine dish of Marie Louise.

Mr. Ogle, of Erridge Castle, Tonbridge Wells, sent four handsome Pine Apples—two of Black Jamaica and two of Enville, weighing nearly 9 lbs. in the aggregate. They were grown on plants which had not been removed for eleven years; and a Certificate of Commendation for meritorious culture was awarded them. The mode of culture will be given in the Society's Journal.

Mr. Rivers, of Sawbridgeworth, exhibited branches of his two autumn-bearing Raspberries, October Red and October Yellow, both completely laden with a profusion of fine, large, juicy, and well-flavoured fruit. Mr. Turner, of Slough, sent enormous specimens of Leeks, called Henry's Leek, raised at Broom House, Dunse, N.B., the white of which measured 10 inches long and 6½ inches in circumference. Messrs. Lee, of Hammersmith, exhibited specimens of their monstrous Cob Nut, a large and excellent variety.

DR. DRESSER'S INTRODUCTORY LECTURE ON BOTANY.

ON the 19th ult. Dr. Dresser gave the introductory lecture on botany at the Polytechnic Institution, when he introduced the subject by calling attention to the fact that persons are generally

interested in those things which administer to their comfort and well-being; and this being the case, persons should be deeply interested in the vegetable kingdom, as it furnishes wood, which aids us in the construction of our dwellings and of articles of ease and comfort; fibres—Cotton from which we fabricate calico and "prints;" Flax, which is wrought into linen; and Hemp, which is spun into cordage; food—thus we have Wheat and Oats, and Barley and Indian Corn, and Rice; and Peas, Beans, Kidney Beans, Potatoes, Artichokes, Turnips, Carrots, Parsnips, Beet, Cabbage, Spinach, Onions, and Leeks; Endive, Lettuce, Mustard, Cress, Radishes, Celery; Rhubarb; Gooseberry, Currant (Red, White, and Black), Strawberry, Raspberry, Apple, Pear, Quince, Cherry, Peach, Plum, Apricot, Grape, Fig, Date, Pomegranate, Olive, Tamarind, Orange, Shaddock, Lemon, Lime, Citron; Brazil nuts, Cashew nuts, Earth nuts, Almonds, Cocoa nuts, Hazel nuts (nine varieties), Walnuts, Chestnuts; Cinnamon, Cloves, Nutmeg, Mace, Pimento, Pepper, Capsicum, Ginger, Mustard, Coriander, Anise, Angelica; Tea, of which about one hundred and forty millions of pounds were received into this kingdom from China alone in the year 1856; Coffee, and Cocoa.

From the vegetable kingdom we also derive perfumes, resins, drugs, and dyes; from Wheat we procure flour, bran, starch, semolina, manacroup, maccaroni, and vermicella; from Potatoes an arrowroot, a sugar, a gum, and starch. We have liquorice, sago, sugar, oils, and a thousand things besides, furnished by the vegetable kingdom.

It was next insisted that it is the duty and privilege of man to view creation with intelligence. In connection with this proposition it was observed that rain falls from the skies, some of which soaks into the earth, and another portion of which trickles over the surface, and by the union of drop with drop produces streams and rivers. That which passes over the surface washes away decaying vegetable and animal matter, whilst that which sinks into the soil is destined to feed the roots of plants with moisture. The rain which sinks into the earth descends for a given time only, for its downward progress is ultimately arrested by the capillary attracting power of the soil.

If a lump of sugar is placed in a spoonful of tea, the fluid is conducted upwards through the interstices of the mass, and when a drop of ink falls upon blotting-paper it is drawn into the pores of the paper; both of these results being due to the power of capillary attraction.

The water which sinks for a while into the earth by virtue of the law of gravitation, is ultimately, though slowly and regularly, conducted upwards towards the surface of the soil by the agency of capillary force; and it is by this means that the roots of plants are ever supplied with liquid food, while there is a necessity for rain at intervals only.

This is one of the provisions made for supplying plants with moisture; and when we contemplate the fact that all the food of plants, the matter of which they are formed, is taken into the organic system either in a liquid or in a gaseous condition, the necessity for a constant supply of watery fluid will be the better understood; and the quantity of water which plants evaporate or give off during life in order that the fluid matter taken up by the roots may become of the consistency requisite for organisation, will also aid us in forming a just conception of the necessity to plants of a supply of moisture.

An ordinary-sized Sunflower (3½ feet high) exhales or gives out 20 ozs. of water in the day of twelve hours, and an ordinary-sized Cabbage gives out 19 ozs. in the same period: hence, an acre of Cabbages in which the rows are 18 inches apart, and the Cabbages, in each row are likewise 18 inches from one another, gives out better than 10 tons and 4 cwt. of water in the twelve hours, or a field of ten acres similarly planted exhales better than 102 tons in the same period.

Not only do plants give out large volumes of water, but a considerable quantity of liquid matter exists in the fabric of the plant; thus, of 100 lbs. of Potatoes, 75 lbs. are water; of 100 lbs. of Carrots, 86 lbs. are water; of 100 lbs. of Turnips, 87 lbs. are water; and of 100 lbs. of Cabbage, 92 lbs. are water (consolatory thought when purchasing vegetables, "I will take them dry if you please").

When contemplating these facts it is seen to be necessary that plants should be supplied with moisture, and any mechanism devised for accomplishing this agency is not to be wondered at.

We have noticed one provision for continuously supplying plants with water in the capillary power of the soil, but other agencies are also at work for securing this end.

If small plants grow in sandy and barren soil, they either

send their roots very far down into the ground, or the leaves are arranged in a circle or rosette which rests closely on the surface of the soil. In the former case the roots descend in search of moisture to a depth at which such may be procured; whereas, in the latter instance, the evaporation or escape of watery vapour from the soil is retarded by the umbrella-like rosette of leaves, and by this agency moisture is retained in the vicinity of the root for a period sufficiently long to be absorbed by it.

Not only is a rosette of leaves a provision for the prevention of evaporation from the soil, but all plants which creep along the surface of the ground are destined to protect the soil from the rays of the sun, and thus to prevent the escape of watery fluid.

The fact, that by standing under the branches of the tree man procures shelter from the shower is worthy of consideration; for the very circumstance that shelter is afforded, teaches us the lesson that the leafy clothing of the branches is so arranged as to conduct water outward from the centre of the tree, or to shelter that portion of the ground situated beneath the arms of the plant. The object, however, is not that of sheltering the ground from water, but in the conducting moisture to the situations at which it is most needed.

It must be remembered that the feeding-roots—that is, the roots which alone enjoy the power of sucking in the nourishment, are not situated near the main trunk of the tree, but are found in the form of a fine and extremely complicated network immediately under the extremities of the branches.

We now see the object of the water being carried from leaf to leaf, and of its being cast upon the soil from the periphery of the branches, for beneath the extremities of the outermost twigs the feeding-roots are alone situated.

Other points of equally deep interest were dwelt upon, the reason why most leaves are thin and membranous was explained, and the special object of the greater thickness of others.

TO CORRESPONDENTS.

BOARDED SIDES TO A GREENHOUSE (H. Chapman).—We should have liked the boards better to be one inch and a quarter, but if close together, grooved or otherwise, they will do well. We have seen such houses do well with feather-edged boards laid over each other, the thickest side being one inch, and the thin side half an inch. Neither use tar nor any thing in the way of paint until the wood is thoroughly seasoned. We object to tar for inside *in toto*. We do not much like coal tar outside; being so black, the wood gets so hot in summer as almost to char it. If used at all, we would prefer Stockholm to coal tar, chiefly on account of its brown colour, and that might be improved by throwing fresh sawdust on it when wet. For such a neat house, however, we should prefer paint or anti-corrosive, but are not sure but the boards but for the appearance would be as well without anything. No plants will thrive in a house so long as the smell of the tar remains. We would avoid all trouble with the landlord by fixing nothing in the ground. Form your house on six moveable blocks laid on the ground, or on two cross-pieces at the ends, and two blocks in the middle. Then a piece of the same size at the sides—say four inches square, will give you the foundation all round on which to fix your upright studs for the boarding, glass, and upper wall-plate for glass sashes. A small moveable stove would be best for such a house.

EXCRESCENCES ON UNDER SIDE OF PEAR LEAVES (—).—We have not previously met with any examples of these excrescences, which appear to be rather the effect of disease on the leaves than fully produced by the attacks of an insect.—W.

PLANTING ASPARAGUS (J. W.).—We have answered this question at p. 94 of our last number.

STRIKING CUTTINGS IN A WALTONIAN CASE (Tyro).—No man, except he be a first-class propagator, can strike cuttings in any ordinary, or in any extraordinary way, from the end of October to the end of January, and some not before the end of February. Your means for striking cuttings, a Waltonian Case, is fit only for spring propagation; then you seem to have all the requisites in it except practical experience to attend to it, and that, of course, takes some time to learn. The Waltonian Case is the easiest way we have ever seen to manage cuttings; and as long as there is sufficient heat as you have, nothing more is wanted but experience. Try again and again till you learn the art of managing cuttings. If you keep cuttings too hot, or too cold, or too dry, or too moist, with too much air or too little, they will not do, and the farthest you are from *too much* either way the nearest you are to the mark.

GREENHOUSE STAGES, &c. (L. R. Lucas).—Your queries were answered in No. 629, page 38.

CLARET GRAPE (F. W.).—The Claret Grape is to be had in any good nursery where the cultivation of fruit trees is attended to. Any of the respectable nurserymen who advertise in our columns can get it for you.

PEARS DECAYING (J. Franchine).—The specimens you sent are similar in their decaying to many others which we have seen. They become brown throughout, have a mouldy, oily smell, and a pungent flavour. The remote cause was the excessively wet and sunless season; and the immediate cause one of the minute parasitic fungi, which similarly destroy our Apples and tubers of our Potatoes. Try if a warmer and drier place will prevent the decaying of your Pears by hastening their ripening.

REMOVING OLD ASPARAGUS (A. Loftus).—Your query was answered in our No. 624.

FARM ACCOUNTS (A Subscriber).—Buy "Peat's Farmer's Account-Book," noticed in our last number. It costs only 2s. If we devoted two pages to answer your query we could not give you such a clear reply as will the use of that book for twelve months.

ASPIDIUM SPINULOSUM.—"In THE COTTAGE GARDENER of August 27th, I offered some specimens of this Fern, and received so many applications that I could not supply them all. I have now procured plenty, and can supply all applicants. I hope this will be accepted as a reply by those who were unanswered.—W. WINTER, Alderley National School, Beccles." We hope all applicants will insert two postage stamps with their letters to Mr. Winter. He ought to suffer no loss by his kindness.

COCOA-NUT FIBRE (F. C. H. G.).—It can only be had by sending to the manufactory, Kingston-on-Thames.

GRAFTING CAMELLIAS (S. Hall).—If you can, place hand-glasses over your Camellias and stand them on a surface of coal ashes, keep them in this position till they have united, and then gradually remove the hand-glasses.

PLANTING LILY OF THE VALLEY (E. C. C.).—This is a very good time to make beds of Lily of the Valley. Our rule is this: five bushels of sand, five bushels of rough leaf mould or rotten stuff from the scrapings of the woodyard, and ten bushels of any good, light, garden soil—all well mixed, and to be put in ten inches deep; and in all new situations to us we make three beds—one in the full sun, one behind a wall, and one on a west aspect. Whichever of the three beds does the best, that aspect is the best for that soil and place; but it might be just the reverse two miles off, and for one to say that any of the cardinal points was the right or best aspect for Lily of the Valley would be to tell of his want of practical knowledge all round the rest of the circle. Lily of the Valley is the most tiresome of plants. You must cut up some old bed or part of it, shake the felt-like roots to free them from the soil, cut the old roots into six-inch lengths, and let there be a plump bud at the end of each. Place all the bud ends one way, and plant them six inches apart in rows, and three inches apart in the row, or a little wider, or as close all over the surface as they will stand. We have set them closer even than that; and we got it to run over a bed of Ghent Azaleas by placing their roots one foot apart every way, but it took some years to cover it well.

ETHER RESIDUUM.—A correspondent of THE COTTAGE GARDENER recommended ether residuum as good for gravel walks. He has only done us half a service unless he can tell us where we can get it at a cheap rate.—R. F. S.

BOOKS (H. M. H.).—Errington on the Peach, or McEwen on the Peach. (Y. F.).—The "Garden Manual" is the most comprehensive and cheap book of the kind. (A Fruit Grower).—Dr. Hogg's "Fruit Manual" is the work you refer to; it contains numerous selections for all parts of the country.

NAMES OF PLANTS (W. Dale).—1. *Adiantum pubescens*. 2. *Selaginella Galeottii*. 3. *Selaginella Martensii*. 4. *Imperfect*. 5. *Adiantum capillus-Veneris* (small). 6. *Urtica* or *Pilea herniariaefolia*.

POULTRY AND BEE-KEEPER'S CHRONICLE.

POULTRY SHOWS.

NOVEMBER 21st, 22nd, 23rd, and 24th. WEST OF SCOTLAND ORNITHOLOGICAL ASSOCIATION, GLASGOW. (Pigeons and Canary Birds.) Sec., Thos. Buchanan, 74, Argyle Street, Glasgow.

DECEMBER 3rd, 4th, 5th, and 6th. BIRMINGHAM. Sec., Mr. John B. Lythall, Offices, Unity Buildings, Temple Street, Birmingham. Entries close November 1.

DECEMBER 6th. HULL AND EAST RIDING. Sec., G. Robson, 25, Waterwork Street. Entries close November 22nd.

DECEMBER 12th, 13th, and 14th. NORTHERN COUNTIES (DARLINGTON). Sec., J. Hodgson, Darlington. Entries close Nov. 19th.

DECEMBER 12th, 13th, 14th, and 15th. CRYSTAL PALACE. (Poultry, Pigeons, Rabbits, Ornamental Water Fowl, and Pheasants). Sec., Mr. W. Houghton. Entries close November 10.

DECEMBER 18th and 19th. LORD TREDEGAR'S, at Newport, Monmouthshire. Sec., Mr. C. H. Oliver, Commercial Street, Newport. Entries close Nov. 21st.

DECEMBER 21st and 22nd. HALIFAX PIGEON SHOW. Sec., D. R. Edgar. Entries close December 8th.

DECEMBER 27th, 28th and 29th. KENDAL. Hon. Secs., G. C. Whitwell and T. Wilson. Entries close December 12th.

JANUARY 30th and 31st. ULVERSTON. Secs., Mr. T. Robinson and Mr. J. Kitchen. Entries close January 10th.

N.B.—Secretaries will oblige us by sending early copies of their lists.

ON THE MANAGEMENT OF POULTRY SHOWS.

(Continued from page 95.)

DARLINGTON.—A very good Show, the classes well filled, and a liberal prize list, which is very much improved this year. Nothing can be more judicious, I think, than the way in which the prize list of this Show is drawn up. It speaks well for the poultry taste of the north of England.

ULVERSTON.—I know nothing of this Show, although my friends tell me it is good and well managed. I have heard complaints of the high rate of carriage for the birds sent to it. It is much to be regretted that all Managing Committees do not enter into some arrangements with the Railway Companies with respect to the carriage of poultry to the various Shows. Ulverston is rather an out-of-the-way place, and I think the Secretary of the Show is rather too positive in requiring the "through" carriage of birds sent to the Show to be paid. This is, in many instances, an impossibility, and I know some persons who have been obliged to keep their birds away from this Show on that account.

YORK.—A Show that does credit to the county. The prize list is liberal, and the Show is well patronised by exhibitors at a distance.

NEWPORT.—Called, also, Lord Tredegar's Show, because his Lordship gives many of the prizes. I am informed that it improves every year. I would recommend the Committee to do away with the regulation which requires every exhibitor to become a donor or subscriber. Such a regulation is only adapted for a small local Show, and not for one which is open to all England.

BEVERLEY.—An excellent Show, well managed, and every care taken of the birds. The Secretary is obliging, and the arrangements give satisfaction to every one concerned.

KENDAL.—A good Show and well established. It is a pity it is not held at a more propitious season of the year; for being in the vicinity of the Lakes, if held in the summer, it would, doubtless, attract many visitors from a distance. I should like to see a class for Game Bantams at this Show. This hint is well worth the attention of the Committee.

DEVIZES.—This is a Show which will soon rank second to none in England. With an enterprising Committee, and a Secretary who does his best to satisfy exhibitors, nothing remains to be desired.

HALIFAX.—This is a nice little Show; but the prize list is not sufficiently tempting to attract many exhibitors from a distance. If the Committee would advertise their Show and improve the prize list, they would see an increased number of entries, and a great improvement in the birds exhibited.

PONTEFRAC.—My remarks about the Halifax Poultry Show will equally apply to this.

GENERAL REMARKS.—First, I would observe, that I think the Secretaries of Poultry Shows pay too little attention to the individual complaints of exhibitors. This is a mistake, for one dissatisfied exhibitor can, generally speaking, influence others. It is in this way that prejudices arise against certain Shows; and I know very well that some of our best exhibitors will have nothing to do with some Shows I could name. I must also say a word against the disreputable practice of exhibiting borrowed birds. I am told that is constantly done with impunity. A silver cup excites the envy of certain exhibitors, and they select birds from various yards to win it. Can anything be more dishonest or unfair to the exhibitors who will have nothing to do with such malpractices? I am afraid it is becoming a system, and if it is allowed to continue, it will seriously injure, if it does not ruin, the poultry movement. Secretaries of Poultry Shows are much too easy in the matter. I will give an example: some time since it came to my knowledge that a person had carried off several prizes at a provincial Poultry Show, and that very few of the birds were really his own property. I mentioned the circumstance to the Secretary, and requested him to bring it before the Committee; but I received no reply to my letter. I could only conclude that the Secretary was in collusion with the dishonest exhibitor. But it behoves the managers of Poultry Shows to take stringent action in this matter. Let those persons who exhibit borrowed birds be not only deprived of the prizes they may gain, but let their names be published as a warning to others. I am quite sure the Editors of THE COTTAGE GARDENER will lend their assistance to eradicate the evil.—J. B.

SPANGLED HAMBURGHS.

THE introduction of laced wings into the Spangled Hamburgs has certainly surprised me; and I am now surprised to see that two such practised Judges as Messrs. Hewitt and Baily should have awarded them the prizes, and can only think the birds must have been vastly superior in other points, as a counterpoise against this great fault. If, however, these gentlemen consider the laced wing a point of excellence, I beg to tell them that we in Yorkshire, and Lancashire too, consider it a fault, and a fault that in Yorkshire would disqualify an otherwise good bird. Let these gentlemen, if they have no practical experience of the fact, inquire of the breeders in Yorkshire and Lancashire, to see whether or not they are correct in awarding such laced birds the prizes, and if they find themselves in the wrong to confess it like men; and if they are right to tell people that they are, so that all may have an opportunity of altering their mode of breeding; but I think I may safely assert that they will find no one to back them up, and they will be forced to confess that the laced wing is a whim of their own. If exhibitors allow Judges to be continually changing the fashion of the markings there will be no end to it, and we shall have to request these Judges to publish periodically the changes that take place. I

wonder what Messrs. Challoner, Stead, Conyers and Jolly say on this point. These gentlemen are entitled to their opinion as much as the two great authorities.—SPANGLED HAMBURGH.

[We have within these three weeks given our opinion as to the laced wings. We can only give our own ideas on the points of any particular breed, and our columns are always open to all. We object at the outset to the term "introduction" of laced wings. They were required ten years ago, when the best Judge of Spangled Hamburgs we have ever had officiated in that capacity, we mean Mr. T. B. Wright, of Birmingham. They have been wanted ever since, though seldom obtained. While we state our columns are open to all, we cannot admire the tone of our correspondent's letter. Either those whose decisions he impugns are judges or they are not. If they are, their decisions *must* be acquiesced in; if they are not, then choose others to award the prizes. We contend the points are *not* continually changing; and we cannot for a moment think it right that a section of the breeders of any particular fowl shall cry down a difficult point in which most birds are deficient. The decision now in question was arrived at by Messrs. Pulleine, Hewitt, and Baily, three of the oldest Judges we have. We believe that no one of them seeks the office of judge; we know that if they thought themselves wrong, they would "confess it like men," and we are convinced they will neither publish changes of fashion in markings nor submit to dictation in their awards.]

BLINDNESS IN CHICKENS.

CAN you assign any reason for chickens being born blind? This last summer, at one time four, and at another six, were born blind within my knowledge. A gentleman told me that it was owing to the hens being fed on rice. Is this so?—H. N.

[Although we keep a careful record of everything that has to do with poultry, we have searched in vain for any case analagous to that you mention. From the wording of your query we suppose that only part of the broods were born blind, and we imagine that they were the produce of hens all fed alike. Rice is an abomination in poultry-feeding, it induces bad condition, and we know from experience it breeds vermin; but we have never found it had to do with blindness. Many years since there was a strain of Cocksins to which blindness was natural, and now where the particular breed has been used as a cross, it is common to find two or three that prove it by the defect of which you complain. We do not advise you to continue breeding from the birds you have. Choose the best of your stock, buy a good cock or two from some well-known strain, and, doing away with all others, keep to their cross, you will not afterwards complain of blindness in your chickens.]

HAMBURGHS.

WOULD you kindly give me your advice as to the selection of stock birds from several hatchings reared this season?

SILVER.—Should a preference be given to birds that appear, as a whole, darker to the eye—that is to say, where the blotches are heavier and deeper and less white seen than where they are lighter or of a more lacy appearance? Is it of much importance that the narrow feathers about mane and tail be tipped, and the wings be also marked, rather than pure white? Whether should the tail in cocks be white and tipped, or dark—that is, where dark and light feathers commingle?

GOLDEN.—Should the breasts of the cocks be all dark or mottled? Are the lighter or orange hued birds, whether cocks or hens, as good as the deeper or redder shade? Will a smaller fowl, if more evenly marked, be preferred to a larger, though, as a symmetrical fowl, not so evenly mottled? Any other suggestions will be duly appreciated by—A BEGINNER.

[It is almost necessary to ask what you want before your questions are answered. If your birds are too light by all means breed from those you mention having blotches of colour, as they are too dark, and will probably give you what you want—i.e., more colour. A lacy appearance is wanted only on the wings, and is, in any other part of the body, a defect.

The feathers on the mane, and hackle, must be more than tipped—they must be striped. The tail should be tipped. The feathers should be white, and tipped with black. Pure white wings are a positive defect. The tail of a cock should be white,

and every feather tipped, mooned, or spangled with black at the extremity.

GOLDEN.—The breast of the cock should be spangled all over. The orange or lighter hue is inferior to the richer and deeper colour. The size of a fowl of this breed is almost unimportant compared with the points of colour, mooning or spangling.

We are always happy to give every information to querists; and at the risk of being thought tiresome we will repeat, legs should be blue, hackles well striped, tails clear, combs firm and well spiked, point turning upwards, breast spangled, colour rich, ear-lobe pure white and not too large, and general appearance cheerful.]

BIRMINGHAM SHOW, ENTRIES FOR.

THE entries for the approaching Show in Bingley Hall are in all respects satisfactory. We subjoin a statement of the total numbers in the various departments in 1858, 1859, and in the present year:—

| | 1858. | 1859. | 1860. |
|--------------|-------|-------|-------|
| Poultry..... | 1387 | 1342 | 1134 |
| Pigeons..... | 222 | 214 | 168 |

There is, it will be noticed, a slight falling off in the entries, which has arisen from the circumstance of some of the principal breeders reserving a portion of their birds for the Crystal Palace Show in the following week; but at the same time all the best poultry-yards in the kingdom will have representatives in Bingley Hall, and the collection will therefore lose none of its interest, nor be less excellent as to the quality of the specimens.

FIFTEENTH RULE OF THE BIRMINGHAM POULTRY SHOW.

IN October last I had a prize list sent me. On looking through the rules and regulations I came to rule 15 where, I apprehended, that none but donors or subscribers of not less than £1 per annum will be entitled to compete for the prizes. Exhibitors, in addition to their annual subscription, will be charged 2s. 6d. for each pen of poultry; but no subscriber can enter more than two pens in any one class, nor more than four pens in the whole. This rule, I think, ought entirely to be expunged, and made something similar to that of the Crystal Palace Exhibition, or they might confine the rule in this way—"that 10s. only be charged, for which either one or two pens may be exhibited." I suggest a rule be made for another year something similar to the one I now propose.

I intended to have exhibited at Birmingham, but on looking at the rules I withdrew my intention, and entered my birds to run at the Crystal Palace at 6s. each entry. It being a great denial to small breeders who keep only a few and first-class birds that they cannot exhibit their birds on account of the subscription, entrance-fees, and railway-carriage expenses, which amount to a good round sum on their arrival.

I am of opinion that if a similar rule be made to the one I now allude to it would give the small breeder a chance of sending his birds to the chief Exhibition which now excludes those who would send. Not only does the present rule exclude small breeders, but excludes some of the principal birds from attending at Bingley Hall which would attend, provided the entrance-fee was not so great.

I believe that if an alteration be made that exhibitors would attend at Bingley Hall more than hitherto have attended on any other former occasion. I leave the subject with your readers, and hope the matter may be taken into consideration before the prize lists are distributed for 1861.—AN EXHIBITOR.

SIZE OF NESTS FOR PIGEONS.

I WANT to begin keeping a few Pigeons, a pair or two of Runts, and perhaps a pair of little Tumblers. Will you tell me what size the nests should be, and whether it would be a good plan to have room for two nests for the same pair with only one entrance-hole? Would not this keep them warmer? I could only have a box fixed against a wall, I thought about five feet or six feet from the ground, as I believe the large Runts cannot fly high. Would the enclosed dimensions be anything like right? or are they larger than necessary? What ought I to pay for good birds of the aforementioned sorts to begin with, and where could I get them—I mean those very big Runts—or is there any other sort likely to be more paying? Do you think

there is any chance of a school-boy making a little pocket-money by them? I would attend to them and feed them twice a-day regularly. Is buckwheat good food for them.—SCHOOL-BOY.

[The dimensions you give will be sufficient for Runts; but I do not think it advisable to place small Tumblers in their company, which would have no chance of maintaining their own house free from attack. The objection to one pair of nests having only one entrance is the facility offered to the young to run into and disturb their parents while sitting again, which they often do before the former hatch can fly. Very fair birds may be bought from £1 to £5 per pair; but if "SCHOOL-BOY" really wishes to increase his pocket-money, I should advise his beginning at the bottom of the ladder, and gradually ascending as he gains experience. A couple of pairs of common Pigeons would cost from 3s. to 4s. Get them of a healthy stock not related, and the two pairs will cost him about 3d. per week, and should produce a pair of young ones each every five or six weeks, which he could sell to his mother at 2s. per pair. When he has managed the first lesson, he can advance a step higher without much fear of falling; but to breed first-class fancy Pigeons, worth from £10 to £20 per pair, requires much experience and judgment.—B. P. BRENT.]

CROSSING GEESSE.

I HAVE three Geese of the breed of this county, which is rather small; I did not breed from them last season, as I had no gander; I am now about to obtain one. Would it be desirable to cross them with the Toulouse, or any other kind? and where might such be obtained at a moderate price?—A DEVONSHIRE VICAR.

[We think the cross of breed by introducing a Toulouse gander most desirable, as that breed has size and weight, besides being hardy. A moderate bird of the breed may be obtained from Baily, 113, Mount Street, W., London.]

REMOVING DAMPNESS FROM HIVES—FEEDING BEES BY A BOTTLE.

WILL you inform me the best plan to get rid of the condensed vapour from a wood-and-glass bar-hive, and tell me in what part of the top I should make the hole to allow the vapour to rise and condense, as I find as soon as the weather sets in cold there is much dampness, and I am afraid when frost arrives this dampness will cause the death of the bees? Would you also say how to use the bottle and net for feeding bar-hives, and in refilling the bottle how do you get rid of the bees that may be sticking to it?—A. Y.

[A bell-glass resting in a feeding-pan and placed over a central aperture in the top of the box (which should be covered with perforated zinc) is usually recommended as the best means of getting rid of moisture in wooden hives. As yours is a bar hive, advantage may be taken of the first fine and mild day to shift the bees and combs into a dry box. The engraving in p. 42 of our present volume shows how a bottle and net are used in feeding a bar-hive. We may add in explanation, that the aperture in the top of the box in the centre is two inches long by five-eighths of an inch wide, and will not admit the bottle-neck, which is kept upright by being inserted in a perforated wooden block. A piece of perforated zinc intervenes between the top of the hive and the mouth of the bottle, which, whilst it prevents the bees clinging to the net, does not interfere with their appropriating the contents of the feeding-bottle.]

BEE-FEEDING AND ITS EFFECTS.

LIKE most apiarians, I have had something to do this autumn in making up the deficiency of the poor honey season of 1860; the feeding employed being to every six lbs. good Barbadoes sugar two pints water, boiled three minutes, divided into four feeds, a tablespoonful or two of honey (squeezeings of comb), added to each make a most acceptable compound. Crushed sugar I tried, but gave it up in consequence of always finding a deposit of crystals left in feeder, which the bees seemed to dislike.

Believing that there exists a strong connection between the supply of food and the increase of the species, breeding generally commencing with the first appearance of a supply and termi-

nating at its cessation; an abundant honey season being productive of swarms, and even swarms from swarms; a poor season such as the last being very deficient; drones prematurely expelled in May, and young half-formed brood found in quantities at the entrances of hives short of supplies; in August and September, proofs of the foresight and sagacity of these wonderful insects in sacrificing what they considered the least valuable lives, as a desperate precaution in husbanding to the uttermost their little store; this view confirmed by a timely supply of food putting a period to such proceedings. Assuming this hypothesis as proved, would it not be both good and economical management to force as much as possible the accumulation of honey in a separate compartment of the hive, deprive the bees of the whole of this when the staple supply of the district failed, and then at once proceed to feed liberally at a much earlier period than is generally pursued? This would in all probability stimulate to the production of a considerable quantity of late brood. These, so far as age was concerned, would all exist over the following spring, materially promote the prosperity of the hive, and induce early swarming, the food supplied not costing half the value of the honey appropriated.

One invariable effect of feeding this season so late as the beginning of October, I found to be the setting the bees in motion to embrace every favourable moment in carrying in large quantities of pollen, the inmates of those hives well found in stores being at the same time in an almost dormant condition. Now, was this pollen gathering to be looked on as an indication that breeding had recommenced in the hive, similar to what it is believed to be in early spring?—a time so pleasing to every apiarian, seeing his little favourites once more resuming their labours, and which that genial old bee-keeper, Bonner, in the exuberance of his feelings heralded as follows:—"The first day in spring that I observe a bee carrying a load I generally call my family together to take a glass and rejoice with me and my faithful servants at the return of the salutiferous season." Or was it merely stored past for future use?

Supposing the former position to be correct, what would be the fate of the youngsters making their débüt at the end of October or beginning of November? I noticed this season so early as the beginning of September, during the cold weather we then had, numbers of young bees crawling about the landing-boards of hives well stored in a very feeble condition. Do you think that their weakness was caused by being denied access to the supplies by their older brethren, and, consequently, went forth to seek in vain for food, perishing in the attempt, or were they merely chilled by the ungenial weather? Is it imperative that young bees on acquiring their freedom should have the benefit of a flight within a given time? and are they ever bred and subsequently prosper at a period so early or late in the season that they dare not venture abroad? Is the acquisitive principle their ruling passion, so strongly implanted in bees, that they will gather up food beyond either their wants or the extent of their store-room and actually throw it away? I am led to put the question from observing some bees, accidentally confined for twenty-four hours in hives from which the inmates had been removed by fumigation, on being set at liberty rise heavily on the wing, apparently gorged with honey, and as they soared up in the sunshine in quest of their hive emit a clear stream of fluid supposed to be honey; also, a large artificial swarm composed of the expelled inmates of several hives put together two months ago. I feel confident they have been supplied with as much food as would more than suffice to fill the hives with comb during the summer season, independently of what the fields would yield, and yet it is not one-third full, the bees absorbing greedily more food, I am satisfied, than either their honey-bags or comb is capable of containing. Your opinion on those different points will confer a favour on—A YOUNG BEE-KEEPER.

[There is no doubt that bees do get rid of a very considerable proportion of any food that may be offered to them, without either storing it in their combs or deriving any apparent benefit from it. This is especially the case when the compound consists for the most part of brown sugar; and for this reason we believe lump sugar to be preferable on the score of economy, to say nothing of the injurious effects which the former is considered to produce upon the bees themselves. The difference between the quantity of food given and that actually stored is, however, sufficient, even under the most unfavourable circumstances, to render it exceedingly unadvisable purposely to deprive bees of their winter store with the view of substituting a cheaper compound. The influence of an abundant supply of food upon the

breeding power of the queen bee is unquestionably very great; and it is usual to find her laying eggs late in the season when copious feeding is resorted to. At the same time it may reasonably be doubted whether this increase in the numbers of the rising generation be not more than counterbalanced by the ill effects of setting the bees in motion at an ungenial season, and by the loss of life arising from the thousand-and-one accidents to which they are thereby rendered liable. Whenever young bees have been expelled from well-stored hives, we have invariably found them to be imperfectly developed, and incapable of taking part in the labours of the community. With starving colonies the case is different, and in the struggle for existence the weakest—i.e., the young, are the sufferers. We believe that the formation of combs during the cold weather of October can only be effected by the consumption of an enormous quantity of food, a great proportion of which is, probably, expended in producing sufficient animal heat to raise the interior of the hive to the necessary temperature for comb-building. Perhaps Mr. Fox would favour us with the results of his experience of "bee-feeding and its effects."]

STINGLESS BEES.

THE *New York Tribune* states that Mr. A. O. Moore has lately brought from Guatemala two swarms of the stingless bees so common to that country, which he has given in charge of Mr. Parsons, of Flushing, who will propagate them for the Agricultural Department of the Patent Office, which will in due time distribute them, if it is found they can be kept in any part of the United States.

These bees are said to be of two kinds, quite different from each other, and both very different from the common honey bee. Stingless bees are not new in this country. Thirty years ago, or more, the late Dr. Hosack, of New York, introduced from South America stingless bees, though we cannot assert that they were of the same species as those brought by Mr. Moore. We believe they did not increase or live long here. The present kind may succeed better. But it has been suggested that the habits of these bees are somewhat like our bumble bee, and probably will not produce much honey.

[We wish those who have correspondents in Guatemala would introduce per steamer a few hives of these stingless bees. Even if they are not such good honey-harvesters, yet their unarmed condition would more than compensate for that. The Guatemalan bees probably belong to those species which Latreille has separated from *Apis*, and has formed into a genus called by him *Melipona*. If they inhabit the mountain districts of Mexico they might endure the climate of the southern district of England.—Eds. C. G.]

COVERING FOR HIVES—EARWIGS IN HIVES.

I SHOULD feel obliged by your informing me whether, if I cover a frame of woodwork with Croggon's asphalted felt, for roofing over some bee-hives which stand out, the smell of the felt would be injurious to the bees or cause them to forsake their hives. The felt smells rather strongly of tar. In feeding from the top, on taking out the cork at the top of a straw hive, I had several times seen an earwig run out, which I, of course, instantly killed. I wish to know whether this is a sign of there being anything wrong with the hives. I have once or twice seen them run under the bottom of the hive. As I do not wish to go on with the expense of feeding if there be anything radically wrong, I should like to know as soon as possible. The bees appear strong enough in numbers, and are also rather fierce.—A HERTFORDSHIRE BEE-KEEPER.

[We are not fond of the use of the felt you allude to as a covering for bee-stocks in winter, and much prefer a house or wooden cover. There might not be the same objection to the asphalted cover, when it did not come immediately in contact with the hive itself, which is, perhaps, the plan you propose to adopt. Earwigs in hives are of course a nuisance, and should be got rid of if possible; but as your stock appears healthy and strong, we should not despair of its doing well.]

OUR LETTER BOX.

ALMOND TUMBLER, DEATH OF (A. Z.).—The little white spot I suspect was a tubercle of canker. If "A. Z." had removed it and touched the place with caustic he might, probably, have effected a cure.—B. P. B.

WEEKLY CALENDAR.

| Day of M'nth | Day of Week. | NOV. 27—DEC. 3, 1860. | WEATHER NEAR LONDON IN 1859. | | | | Sun Rises. | Sun Sets. | Moon Rises and Sets | Moon's Age. | Clock afterSun | Day of Year. |
|--------------------|--------------------|--------------------------|------------------------------|-----------|-------|--------------------|---------------|--------------|---------------------------|----------------|-------------------|-----------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | |
| | | | | deg. deg. | | | m. h. | m. h. | m. h. | | m. s. | |
| 27 | Tu | Elm leafless. | 29.963—29.844 | 50—35 | N.W. | .62 | 41 af 7 | 55 af 3 | 47 6 | 14 | 12 2 | 332 |
| 28 | W | Coltsfoot flowers again. | 29.853—29.806 | 47—29 | N.W. | — | 42 7 | 55 3 | rises | O | 11 41 | 333 |
| 29 | Th | Thrush sings again. | 29.820—29.486 | 48—33 | N.E. | .56 | 44 7 | 54 3 | 22 a 4 | 16 | 11 20 | 334 |
| 30 | F | St. ANDREW. | 29.516—29.471 | 42—29 | N. | .02 | 45 7 | 53 3 | 25 5 | 17 | 10 58 | 335 |
| 1 | S | Grey plover goes. | 29.832—29.618 | 42—32 | N. | .02 | 46 7 | 52 3 | 39 6 | 18 | 10 35 | 336 |
| 2 | SUN | ADVENT SUNDAY. | 30.015—29.928 | 38—26 | N.E. | — | 48 7 | 52 3 | 59 7 | 19 | 10 12 | 337 |
| 3 | M | Pin-tailed duck comes. | 30.146—30.061 | 36—20 | N.E. | .01 | 49 7 | 51 3 | 21 9 | 20 | 48 9 | 338 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 48.0° and 35.2° respectively. The greatest heat, 62°, occurred on the 1st, in 1857; and the lowest cold, 14°, on the 30th, in 1856. During the period 118 days were fine, and on 113 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

Brussels Sprouts, when the head is cut the dead leaves to be removed; but none of the green ones, as they serve to protect the young side sprouts. The same may be adopted with Scotch Kale, and other Winter Greens. *Cabbage*, when a favourable opportunity occurs take advantage of it to earth up the autumn plantations; it both invigorates and prevents them from being blown about by the wind. *Cauliflowers*, never neglect to give air to those under hand-glasses and in frames daily, unless during severe frost; if the plants are now drawn by an insufficiency of air they will be very liable to button off. *Endive*, if any have been planted in frames, admit air freely, to prevent rotting. *Parsley*, a spare frame placed over it will protect it from frost. Some roots may also be potted and protected, and when wanted to be placed in a house where forcing is going on. *Radishes*, as soon as they come up in the frames air to be admitted at every favourable opportunity, to prevent them from drawing up weakly.

FRUIT GARDEN.

When pruning Peach, Nectarine, and Apricot trees (they bearing mostly on the young wood of each preceding summer) leave a plentiful supply of the best well-placed side and terminal shoots, and prune out closely all remaining foreright superabundant shoots and unfruitful old wood, to make room for the young, which shorten about one-third, and strong shoots less, and weak ones cut shorter; then nail the whole tree regularly, arranging the branches fan-shape three or four inches asunder. As Pear, Plum, Cherry, and Apple trees continue bearing several years on the same branches upon small natural spurs, retain the best-placed young shoots of last summer in vacant parts, removing the worn-out old branches and dead wood. Continue all the proper shoots and branches at their full length, and train them in regularly on the wall.

FLOWER GARDEN.

Take advantage of wet days to clean out flower-seeds from the stalks, and to tie them neatly into packets, correctly naming each sort; also to make labels, to prepare stakes, and to tie them into bundles, and to store them away in a dry place until they are wanted for use. Layers may now be made of the young shoots of various shrubs, either to cover the nakedness of the front part of the shrubbery, or to raise new plants. If any walks are overrun with Starwort, Liverwort, or the various Mosses, the best way is to dig them over, and to bury them with the spade, which, when raked and rolled smooth after digging, will present a new and cheerful surface to the eye. If a thin sprinkling of fresh gravel could be given over the surface before rolling, it would increase the effect.

STOVE.

It is advisable to be cautious not to overheat this house, as, by so doing, the plants would start into growth

—a circumstance that would be very injurious at this season. Many stove plants are apparently always in a growing state, but rest them now if possible; 60° by fire heat will be amply sufficient for them. Look sharply after mealy bug, scale, and all insects. Plants for winter flowering may be placed in the forcing-pit until they develop their flowers, when they could be removed to their original and drier abode.

GREENHOUSE AND CONSERVATORY.

Particular attention to be given to keep these houses dry; water to be given only when the plants are very dry, and then in the forepart of the day; if a drying morning cannot be chosen, apply a gentle fire heat with a sufficiency of air to allow vapour to pass off. Remove dead leaves and blossoms. As the more delicate kinds of Heaths and hardwooded plants are often attacked by mildew, which is generally caused by a damp, stagnant atmosphere, air should be allowed to circulate freely amongst them at all favourable times both day and night. Fuchsias that have been out of flower some time will keep well during the winter in any dry out-of-the-way corner of the house.

FORCING-PIT.

Fill up every corner of this useful structure with bulbs and plants; for upon them will depend in a great measure the floral display to be made for some months. Azaleas and Camellias formed in bud may be introduced here for early flowers. Keep up the heat at night to 60° with moisture, with 5° to 10° more in the day.

PITS AND FRAMES.

When cold, the lights to be closed at night, and when frosty, to be covered with mats and long litter, avoiding fire heat, where it can be applied, until it is absolutely necessary.

W. KEANE.

CHRYSANTHEMUMS AND OTHER PLANTS.

VERSAILLES NURSERY, HAMMERSMITH.—Nov. 20th.

MR. SALTER has made a great improvement in his winter garden by extending it at the farthest end to join a section of another house, which stands at right angles with it. One enters it now as at the bottom of the letter T. If the leg of the letter is 100 feet long, the cross top is 50 feet, and the quantity of plants, the number of kinds, and the succession of bloom apparent on the face of them is more than it ever was, and will be longer by a full month, if not six weeks, than any of us have yet seen in this country. It is probable that Fortune's Two-coloured Incurved (the latest of the race) and many of the late best Pompones will begin to open their flowers about the 15th of December, and if so they will last a month. It is the same all round London: therefore, the Prince of Wales would be yet in time to invite the American host to see the grand sight. The Empress of the French and two other ladies, all in black, went minutely into the merits of the finest kinds at the

Crystal Palace Show with no fuss or fashionable attendance. And any foreign customers of ours who may like to see our Christmas cheer will be able, this season for the first time, to see the strength and beauty of these Chrysanthemums at the same time.

On the left, along the winter garden, is a sloping bank of beauty, rising from an undulating front to a snow-white back wall, against which the whole way is gracefully festooned with *Cobæa scandens*. Against the face of the back wall above the Chrysanthemums is a line of specimen scarlet Geraniums in bloom, and interspersed with sizable Orange tree or bushes in fruit, and some fine-leaved plants. The even surface of the huge bank of bloom is varied with standard plants or "starers" artistically set for effect, like the rest of all the moves in this fashionable nursery, the rarest of which starers is a broad-leaved new plant called *Wigandsia caracassana*, which will do out of doors in summer, and which is said to bloom after the fashion of *Paulownia imperialis*; Oranges and Myrtles, Norfolk Island Pines (*Araucaria excelsa*), a dried specimen of the flower-stem of *Ferula glauca* in fruit, and nearly 10 feet high—this kind of *Ferula* being the best wilderness plant in England; *Arundo mauritanica*, a fine thing, which blooms freely, which few of them do with us; a remarkable specimen of a new *Acacia* from New Zealand, something in the way of *A. lophantha*, received from a settler as "their scarlet Mimosa;" but whether scarlet flowers, or pods, or produce was not stated on the label. *A. lophantha* itself was there also—one of the best front hall or lobby plants we have, and others of the same clan.

Along the centre walk are introduced beds of oval shape, planted, and the walk going round them. From these the front is literally crammed with dwarf plants of all kinds of Pompones and Chrysanthemums, and good things of other classes. The oval beds are planted thus: Dwarf plants of *Canna gigantea* and Lycopods in one, a short Norfolk Island Pine and fancy Ferns in the next, *Centaurea gymnocarpa* (like a frosted silver Fennel plant) with little *Cupressus funebris* round it, and deeply bordered with *Festuca glauca*—the best grass in the world for making miles of carriage-road verges through woods, shrubberies, and wild scenery. It never wants cutting, rises from four to six inches only, and sits as solid as a Saxon lord, and as greenish-grey the year round as the back of a wood pigeon. Next bed, all kinds of variegated Ivy, of which *latifolia maculata* is the newest and the best, and seems as if between the Irish Ivy and the one called *heterophylla*. Another is of a silvery variegated Fern, called *Pteris argyrea*, which is in the way of the new *P. tricolor*; and in the end bed next the entrance is an 8-feet-high pyramid of *Camellia elegans*—Chandler's best variegated sort—the finest specimen of it I ever saw in a pot, and when in full bloom a fit wedding present to a princess. Verily and indeed, the proper setting of plants to get them to combine for artistic effect adds ninety per cent. to their value to a stranger, and the art of placing plants properly is now fast gaining ground about London.

I would advise a run up, or a drive down, just to see how the Messrs. Salter, father and son, and he "Alfred Salter," have done so much for effect at so little cost, even if you did not intend to buy a single plant, but confined your purchases to the double ones, and here they are and to spare and satisfy. Beginning with the best of the newest—say, Alma, a large crimson (*Chrysanthemum crimson*), with reflexed florets, one of the new strain of good habit for private pot culture. Arthur Wortly (Salter), a delightful flower worthy of the name it bears; a rosy amber, a new tint, tipped with golden yellow; a standard model of shape, undressed, and one of the best pot plants. Boule de Nieve, a very late white kind when all the whites and blushes are over, a full incurved bloom. Clipper (Clark), another of these non-descript colours between red, orange, gold, and carmine

in shades; an excellent kind for single-specimen style. Jewess, orange and red, and as good as Clipper singly. Mrs. William Holborn, I believe the Anne Salter that was, one of the very finest of all the true white flowers, having, of course, all the properties due to such a name; but like all Madames this requires kind and liberal treatment to bring out that which Nature planted within. Mr. Murray, a reflexed beauty in the nearest tint to the new magenta colour, which Mr. Salter describes as dark violet rose, and what I would call a deep rose, suffused with violet purple. At all events Mr. Murray is now the best of that clan, and a true lady's colour with the new habit of close growth for specimens; and Queen of the Isles, a pure white, incurved. The first newest six kinds in Mr. Bird's selection (see page 104), belong to the above, or say in so many words, Alarm, Negro Boy, Novelty, Saccoa Nova, and Yellow Perfection. But Mr. Salter has proved Novelty not to be constant; you must mind, therefore, it is only a show flower, the largest of them all, though not constant without particular treatment. In addition to the first-rate old kinds from Mr. Bird's report, the following are added by Mr. Salter as first-class flowers for private use, for the length of time they keep, for the easy management they require, or for the habit of the plants for good pot specimens. Baron Scalebert, Cassandra, Celestial, Colonel Combes, Dr. Rosas (an extra surely), Globe White, Golden Lotus, Indostan, Jardin des Plants (extra), Louisa, Madame Dumage, Marshal Lannes, Persanne, Prince Jerome, Pygmaeon, and Sulphurea superba.

That addition to my list of primers need not hinder me to give the praise due to Queen of England, and the sport to Vesta, and Dupont de l'Eure, Aimée Ferrière, Alfred Salter, Chevalier Dumage, Thermis, Pio Nono, Lucidum, done in such style as to deceive your reporter, who mistook it for Novelty. Does your Lucidum come pure ivory-white, or half white, or half pink, or suffused with pink on the edges of all the florets? The bottom half of the present style of Lucidum was much pinky, and the size half as large again as we generally see it; yet the plant was from the open ground. Anaxo, one of the best of the foxies; Beauty, very fine; Hermione, never seen larger and fairly tipped; Fabius, nearly over; Curtius Quintus, fully as good from the open ground as those plants of it which were potted in pots; and Princess Marie, which is a type plant for a new strain of flower differing entirely both from the incurved and reflexed, or recurved flowers. The flowers of Princess Marie, of Jewess, and a few others, are globes after the shape of the best Dahlias. Dr. Rosas gathers itself up to a centre naturally, and as evenly as the most dressed flower. The yellow sport from Trilby is here also; Lady Hardinge, the new rosy blush for which Mr. Salter had a first-class certificate from the Floral Committee, is among a lot of equally good kinds. Little Harry is one of them, an excellent-habited dwarf kind, with fine yellow flowers—next shade to Fabius; for this in its earliest stage a certificate of merit was given by the Committee, but in its present full development deserves the first-class honours. Baron Gros, named after Lord Elgin's French fellow plenipo' in China, is an improvement on yellow Queen of England, having stiffer florets, and will be a good lift at competitions, will come out next spring; also, Rifleman, a large Indian red flower; and Golden King, a clear yellow sport from his grace, just come in time to hold up the honours of the ancient coronet. To these novelties add the following, which are still under numbers waiting to be approved by those after whom they are to be named; but they can be had next spring under the numbers, if, meantime, we should not hear their patronymics. No. 22, a large, white Anemone flower, the best since Nancy de Sermet came out. No. 35, a new colour, yellow and light amber finely mixed, one of the best seedlings yet raised. No. 68, a fine, large, creamy yellow flower, of the same shape and style as Christine. No. 69, this will be a

delightful flower of a deep rose carmine, and lighter towards the centre, where the bottom of the florets are white, a new style of colours; Negro Boy when first opening is partly in the same style. No. 73, an orange and red seedling in the new strain of Princess Marie, a large, perfect globe, or what Mr. Bird would call three-parts of a cricket-ball. All this shows how fast the Chrysanthemums are improving, and how close the competition between the London seedlings and those of Guernsey—Mr. Clark's.

The Pompones seedlings are yet too far behind time to judge of them properly. A fine, dwarf, shaded yellow kind called Jesse, and a deep rose with white bottoms—a great improvement on Adonis, were the only two that I could trust judgment upon; for now I consider my judgment in the plural number, for if ever I tarnish the banner of the Floral Committee they will blackball me from the host. Mr. Salter grows his whole stock in summer in the open ground, and keeps up a botanical collection of them and of many other families. His collections of liliputians, or button Pompones, are well worthy the attention of fathers and mothers, if only for their children's gardens, and his is a prime list of them for that very purpose:—Fanferluche, Il Brasiero, Le Nain Bébé (a sweet thing), Marquis d'Alfareti, Ninette, Pompon d'Or, Queen of Liliput, Queen Mab, Theresita, and Zoe. These are cheap as Daisies; and to help out some bedding plant which is over by the middle of September no plant is more suitable than the Scarlet Gem Pompones.

GAZANIA RIGENS.—Just like the whole season—ever raining, and every rain a pour. I thought, if *Gazania rigens* was alive, I should find it with Mr. Salter. To try me he brought two kinds without bloom. Mr. Snow from Wrest Park, one of our very best flower gardeners, was by my side. We both hit on *rigens* at once. He knew it also, and would not believe that any mortal could ever liken it to *splendens*. We both put it to Mr. Salter how a stock of it could be got up at once to send to our country cousins; and he told us a secret—that *rigens* is of the nature of the Unique Geraniums; that it is not good or good policy to make cuttings of it, except in February, March, and as long in April as it did not show for bloom; that on the turn of the new year old plants of it should be put into heat to force young growth for cuttings; and those who will may prove his words by ordering each a couple of his young *rigens*, for he cannot yet offer it by the dozen, nor could any one either of us ever heard of. A letter from Mr. Taylor from Shrubland Park (of course every scrap is true from Shrubland), was waiting my return, and the first gardener in one of the best gardens in England writes thus:—"I see by THE COTTAGE GARDENER there is much cavilling about *Gazania rigens* and *splendens*. I had a bed of the true *rigens* this season. It did not bloom so freely as *splendens*. It is larger in the flower, but I do not think it will ever be so good a bedder as *splendens*." When plants were grown for their botanical interest, as was the case with most plants when I first knew *rigens*, its flowers were not so large as those of *splendens*; now we hear that in the hands of such a cultivator as Mr. Taylor, and in such a place as Shrubland Park, the *rigens* flowers are even larger than those of *splendens* itself. You may rely upon it this discussion was a most capital thing, thanks to the valour of our fellow workers, and if we do not have *Gazanias* enough the year round, and prove the difference between them and *Arctotuses*, my name is not Wamba, son of Witless.

Mr. Salter has a second kind of *Gazania uniflora* about one-quarter the strength of *uniflora*, which, in the richest soil and out of pot, keeps to that habit without much difference in the flowers. I shall have a long tale of his variegated plants, his rare kinds, his new double and single *Pyrethrums* and others; but must conclude with one which has already obtained a hearing or two in THE COTTAGE GARDENER. The cuttings I received lately from

"A YORKSHIRE CLERGYMAN," and which kind is again mentioned by "AN AMATEUR, Leeds," at page 102. This is the very old *Arabis alpina variegata* of cottagers for an age or two, and is as well known to old inhabitants as *Gazania rigens*, but, like *Cerastium tomentosum* of equal date, it has stood idle many years; but a race of bloomers rose since then without ever having either heard or seen of such a plant.

D. BEATON.

EXPOSING VINES TO FROST—A PLAGUE OF RED SPIDER—SHIFTING POTTED VINES.

I HAVE a small greenhouse, which I am obliged to keep a fire in most of the winter, as we have the frost very severe. I have six Vines in it which I have always turned out of doors about this time, and return them in February. I wish to know if it is a good plan or not?

In a Peach-house I had a quantity of Grapes ripe. I kept the house a little warm and dry, with a little neglect; the consequence is, my trees are covered with red spider. The leaves are all off, but the buds are all full, and all the bunches of Grapes are full. What had I better do?

Which is the best time for potting or shifting Vines in pots?—SAM.

[In such a case we would never take the Vines out. What good could it do?

Do we understand rightly that the leaves of the Peaches and Vines are all withered off, and that the red spider is covering the bunches of Grapes? In that case, if the wood of the Peaches and Vines is ripe and hard, *not without mind*, take a quarter of a pound of sulphur, mix it with a pound of sawdust, and set fire to it in a shovel or pot, covered with a good deal of damp moss, and do this in a dull afternoon after shutting the house up, and open the first thing by daylight next morning. Mind, however, there must not be a green leaf in the house, if you do this. If there are leaves green, or the wood green, you may heat a kettle or two with water in them almost to boiling—say 190°, and then paint the outside of these with sulphur made into a thick paint with water, and set them in the house. This would be the safest mode under any circumstances.

Shift Vines in pots about July or August, for the last time. Of course, when your Grapes are cut you will thoroughly wash the plants, house, &c.]

WINTER TREATMENT OF YOUNG GLOXINIAS.

I HAVE a quantity of *Gloxinias* grown from seed which have made nice little plants, but not blossomed. Others I have grown from leaves; and most of these have made good tubers, and some of them a few leaves also. They have been kept in a Cucumber-frame all the year; but it is now cold, and I have removed them to a shelf in the greenhouse. The usual heat in this is from 40° to 45°, will this suit them? Should they be kept dry? and in the spring must I repot them before starting them in the Cucumber-frame?—P.

[Your *Gloxinias* should not be in a lower temperature than 45°; therefore give them the warmest end of the greenhouse. When the leaves are all withered, the tubers would keep very well in sand in a drawer or cupboard in the kitchen. They are quite as safe, however, in the pots; and if plunged in moss would need no watering during winter. If room cannot well be given them on a shelf, they would do quite as well laid down in a heap—the pots on their broad sides, a little hay thrown over them, and a mat or a cloth thrown over to keep all neat and prevent drip from pots getting at them. It is best to start the tubers into growth before potting them.]

CALIFORNIA FARMING.—On the Mammoth farm, about fifteen miles from Sacramento, in Yolo county, partly owned by General Hutchinson, of the St. George Hotel, were produced this season one thousand acres of Wheat, one thousand acres of Barley, and eighteen hundred tons of hay. The full yield of Wheat averaged thirty, and Barley forty bushels to the acre; the produce is estimated at 60,000 bushels at 1 dollar 50 cents a bushel, or 80,000 dollars. The hay would foot up 20,000 dollars. Thus this farm will yield a total of 100,000 dollars this year.

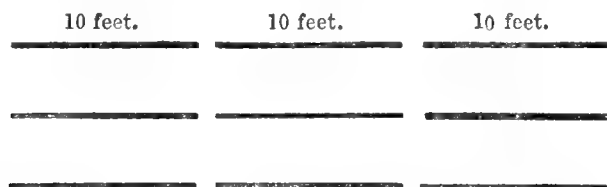
The *California Farmer* states that the sales of fruit from the farm of G. G. Briggs, of Marysville, last year, "were greater than any gold mine in California, amounting to over 100,000 dollars.—(*American Country Gentleman*.)

COVERING PLANT-HOUSES WITH TIFFANY.

I HAVE for some time purposed making a few remarks in your columns on tiffany-houses. When the idea first occurred to me of using such protection for fruit trees I wrote to you on the subject, as I had conceived the plan from some sketches and notices of Mr. Standish's houses in your paper some time last March. I wrote to Mr. Rivers at the same time, and to the same effect, and he has taken up the plan with his usual enthusiasm. Some numbers back I noticed that you advised "A DEVONSHIRE RECTOR" to erect a permanent tiffany-house to protect his Currants, &c., from birds. On the strength of this, added to your favourable reception of my own suggestion before of growing fruit trees in tiffany instead of glass orchard-houses, I erected, as I had at first proposed to you, a lean-to structure of laths and Larch posts against a nine-foot wall ninety feet long, and made it with a door at either end, so as to have the tiffany on always like glass, with proper ventilation of course.

I write this in the hope of saving others from incurring such expense and making such a blunder as I now hold I committed when I built my lath-house as a permanent affair. I am convinced now that no fruit trees grown under tiffany all the year round would be healthy, or ripen fruit with fine flavour. Mr. Rivers thinks the introduction of these structures valuable only as a protection against spring frosts. I am disposed to go further, and I hope I may be able to draw out the opinions of some competent judges on the point, as I have yet no experience to confirm or sanction my theoretical belief.

I believe that if the north side of a tiffany-house be permanent, and the roof so contrived as to be capable of being propped up at such an angle as to admit the full blaze of the midsummer sun to every part of the said north side, that the heat will be much increased during the daytime, both by the rising hot air being checked, and also by the rays reflected on to the ground from the roof suspended above. There will be this further advantage, it seems to me—namely, that in autumn as soon as the nights became cool the roof might be let down for the night, and the sides added as well, and thus much heat prevented from escaping. With this view I would have the tiffany tacked to laths—say ten feet long, without, however, being severed between the contiguous laths—thus:—



This would enable the gardener to fold back the sides and roof to any extent, and fold it up all together and stow it away in the winter. If the top lath rested on pegs projecting from the ridge-board, the weight of the laths would keep the tiffany tight on the rafters running from the ridge to the eaves every five feet, and supported on plates resting on Larch poles.

After the first week in June I should propose to fold the tiffany back, double or treble, as most convenient, and support it by rods toothed underneath, so that the roof could be lowered or raised by moving to a higher or lower notch.

In my own case, the width of my border being twelve feet, and the roof thirteen feet from ridge to eave, I have another row of Larch pillars halfway between front and back, with a plate nailed along it supporting the rafters, which will make the house safe in case of a heavy fall of snow in March or April. The plates are five inches by three-quarters of an inch, set edgewise; the rafters one inch and a half by three-quarters of an inch, also set edgewise.

I do hope some experienced and unprejudiced gardener will give his opinion on the matter.

I have been much pleased with Mr. Pearson's paper on orchard-houses, and had I my orchard-house to build now I should follow his plan, and have a forty-feet-by-twenty-feet brick and glass house instead of a sixty-feet-by-fourteen-feet wood and glass. A frost on the night of the 12th of October last made my

Vines and Fig trees look very foolish; so much so, that I have resolved, as a choice of evils, to put some heating apparatus in the house, to make it safe against spring frosts and to ripen the wood earlier in the autumn. I purpose having a small furnace at the south end occupied by Figs, Black Hamburgh and Royal Muscadine Vines, with a flue of nine inches by seven inches, two bricks on edge, with slate top, running under the ladder-path down the centre, and issuing in an iron pipe nine inches in diameter at the north end. My south end is glazed to the ground, with twenty inches by eighteen inches glass set edge to edge. Ought I to have lead put at the junction of the lower rows of frames to keep the frosts from the Figs? This end of the house, I should add, is two feet above the soil, and has a door with two steps down. Again: Would the furnace-door be better inside the house or without? Lastly: Would it be a good thing or not to nail some hair felt along the woodwork below the shutters? A space of two feet and a half in height, tongued, three-quarter boards painted stone colour. Above the shutters I have fifteen-inch panes to the eaves. If the felt would be an unnecessary expense, would it be of any use to let in some panes of glass here and there along the sides beneath the shutters, and just above the ground, as many of the trees should bear fruit nearer the ground than two feet six inches, though all single-stem trees and upright-trained Vines, no bushes?

I should not have asked so many questions, but I feel sure that your answers will be beneficial, not only to myself individually, but to other amateurs, of whom so many are now turning their attention to the very interesting mode of growing fruit recommended by Mr. Rivers.

Allow me in conclusion to thank you for the valuable paper on Peach training translated from the French, in your number of the 6th inst. The method of pruning Peach trees is that which I have been following this year under Mr. Rivers' directions, but quite blindly. I did as I was told, without the least understanding why, and latterly I have been in a state of complete despair, finding many shoots shrivelled up, as I now find from pinching too soon; others continuing to push, push, push, till within this fortnight, owing, I suppose, to the tree being planted in the border, not in pots, and my being thus unable to starve them into ripeness by drought. The buds on my Peach trees are only just forming, and are not yet sufficiently developed to let me judge for certain which are bloom. I fear, however, that they are mainly wood-buds. I lifted them all but a few about the 23rd of October, though the leaves had not fallen, in order to force them to rest. I can see no difference in those I left alone and those I transplanted. I have put a stove in, and the wood seems to be very slowly ripening. I suppose there is nothing more to be done? The trees seem none the worse for being moved before they had shed many leaves. They still bear leaves unflagging, and but few of the tender green shoots are flaccid, so that I trust I have not harmed the trees, as I feared I might. Peaches, however, next year I am not sanguine enough to expect, the wood being still so abominably unripe. The Plums and Apricots went to rest betimes, and are looking well. The lower buds of spurs formed this year by pinching Plums and Apricots are bloom-buds, I presume.

Can this year's wood, which has sent out further shoots and had them twice stopped, have blossom-buds on it now? If the third joint, can the second also? The last-pinched shoot, of course, can only contain wood-buds.

Most of my Pear trees pushed the terminal buds after being cut back in August, instead of resting as they would have done in a drier year. Of course they cannot ripen even the little bit I have not pinched off these second growths. Should I now cut back to the next unpushed bud, or leave them to take their chance? I hope my extreme ignorance may elicit information useful to others.—IGNORAMUS.

[We have little faith in rearing up the tiffany at any angle with the back wall in summer, as on hot days the wall will be hot enough without it, and on sunless days such as we have had this season, it would do little to prevent the wall cooling, and in a hurricane of wind from the south we should expect to find a part of it a mile from the place. However, we do believe that you could forward the fruit if such a cover was brought down over your poles as soon as the sun left the wall in the afternoon in summer; and as a protection from frost it would, no doubt, be invaluable, and, if easily moved, all the better. There is no doubt the flue will be a great security both against frost and in ripening the wood and the fruit; but do not cover it with slates, these are so apt to crack with heat. Better use tiles. It would

be cleanest to have the furnace outside. See that it is twelve inches to eighteen inches lower than the flue. The glass if lapped might either have lead laps, or a small sprig of metal stuck in at the corners; but if the glass at such a place was placed edge to edge no such thing would be required. The felt will be an advantage, but if the wood is close it will not be needed in the heated part. An iron or a brick stove might be used in other parts where desirable. We do not know exactly the form of your house, but the more glass the better, if the cold be excluded. This has been a bad season for ripening Peach trees inside or out. Unless your trees were excessively vigorous, we would have preferred baring the roots and cutting a few roots to transplanting them, though we think the latter will be in their favour. The process would only arrest growth. After the end of October it would do little to mature fruit-buds. The season has fought against all of us in this respect. It is not likely that second or third shoots of this season will be productive; in good seasons second shoots often are. The Pear trees you may cut back again to within a bud of where they were shortened to.]

CAUSE OF CAMELLIAS FAILING.

A CONSTANT reader will feel obliged for a few remarks on the failure of the above. They were treated as follows:—There are eight of them planted out in the conservatory-border. They made from five inches to seven inches of young wood last spring. After the wood being ripened they were thinned out, and made uniform. During the summer months they were kept rather drier than usual in consequence of the wet season, but not so dry as to deprive them of due nourishment. Two of the strongest and healthiest of them became blotched on the leaves about the latter end of August, as if caused by condensed drips; but there was due circulation of air given both top and bottom at all favourable opportunities. About the middle of September they showed symptoms of growth; and in order to check the growth and give due time for the flower-buds to form, they were kept in a drier state for three or four weeks, then they had a more liberal supply of water. At intervals they dropped some buds, and in these last few days a great many of the buds have dropped off. The plants in pots were subjected to the same treatment, but had a more liberal supply of water. Plants which were not pruned are keeping their buds best; but they are all making young growth at present.—M. J.

[After growth in spring the buds would form at the points of shoots. It was too late then to prune. After ceasing growing the wood should have all the air possible, and as much light as not to burn the leaves; but the plants should never be dry to any extent. The allowing the plants to get so dry is the chief cause of failure, so far as we see, and most likely the cause of a second growth so late in the season. The blotching of the leaves might be partly owing to the want of moisture to keep up the evaporation from the foliage; but most likely was chiefly the result of a bright sun striking the leaves when in that condition, after a week or a fortnight of dull weather.]

COVERING VINE-BORDERS.

I MAY just say on this point that my friend, Andrew Scott, gardener to David Harrison, Esq., of Staleybridge, covers his borders (which are twenty feet, or so wide), with boards which have been coated with gas tar. They are placed lengthways from the top to the bottom of the border. They are put on in October, and remain until the latter end of March, so that no rain falls upon the borders during that time. He grows some splendid fruit; the berries often are like good-sized Plums.—J. HAGUE, *Gardener, Groby Lodge.*

GREEN STAINS ON STONE-WORK.

IN your number of THE COTTAGE GARDENER for November 6th, you recommend an annual coat of stone-coloured paint for a stone stage of a conservatory to keep down the green stains on the same. Allow me to say how I manage mine, which consists of five steps or shelves, with a bottom face of worked stone three feet six inches in depth. I am often told how clean it looks, yet I only wash it three, or, at most, four, times in the year.

I adopt the following plan:—At the time I am changing the ants—for instance, when taking out the Fuchsias, &c., and

about to bring in the Chrysanthemums, I get some fine white sand, or the common red sand, a stone about the colour of the stone of which the stage is built, but softer, if possible (a piece of a broken scythe-stone is first-rate), a mop-rag, and some clean water. I wash all the green off with the rag and water. It comes readily off by my plan. After I have washed the dirt off the stone-work I slightly wet it all over, and sprinkle some fine sand on it not too thickly, and then stone it well with the soft stone. After this I take the mop-rag and spread the stoning over any place that may have been missed. I then let it dry, sand and stoning together. When it is dry I take a common hand-brush and sweep the rough particles of sand off. It then looks like stone-work itself. By this plan there is a fine coat of sand and stone left on the stage, which prevents stains from sinking into the stone, and dirt is very easily washed off. There is no eye-sore about it if too much sand is not put on, and I can assure you it is a great convenience to me, for I have considerable stone-work to deal with. I sweep it once a-week, and it is rarely that I have anything more to do to it beyond the times I have named.—JOHN HAGUE, *Gardener, Groby Lodge, Ashton-under-Lyne.*

PREPARATIONS FOR THE WINTER SUPPLY OF VEGETABLES.

IN my last paper the duty of securing certain vegetables at present in use from the severities of the weather was dwelt upon: it is now proper to make a few observations on what can be done to forward others, which up to the middle of November may be expected to be at rest, their summer growth being perfected, buds set for the next growing season, and the plants enjoying that repose Nature and the coldness of the ground have decreed they should have at this season. Beautiful as this design may be, the tastes of the times sometimes require that it should be disturbed, and the intended repose of such plants as Sea-kale and Asparagus abruptly broken. This, however, ought to be as gently as possible, as plants as well as animals require a period of rest; and the more this is shortened to suit some artificial purpose, the less the duty that each will perform until the natural period of rest returns again: therefore, those who wish to have Sea-kale by Christmas, must not expect it to be so good as those who are willing to wait until February for it. But it may be had at both times, and, like most things else, the earlier that it can make its appearance the more it is admired: therefore, those who wish to have either of these articles by Christmas, must begin by the middle of November at latest, and commence the forcing of each as gently as possible. But as these and other plants deserve a separate notice, it will be best to give it here in that order.

ASPARAGUS.—Like most plants of a truly herbaceous character, this plant stores up a considerable amount of what may not be improperly called vital energy before its foliage dies down, which, in the shape of plump, well-formed buds or eyes, attached to vigorous and healthy roots, furnish the "heads" the ensuing season in greater or less perfection according to the strength of the plant. Now, these buds may be started into growth long before their ordinary season of doing so, by applying heat in some form or other to them; but as this cannot well be done on the natural ground where the plant is growing, it is generally best to take them up with as little damage to the roots, and as much earth attached to each as possible, and carry them to some place where heat may be gently given to them at first; but it may be increased afterwards as may be necessary. Where there is the advantage of a fire or hot-water-heated structure, this gradual change from the icy-cold ground to gentle, and then to moderate warmth, is perfectly at command, and the result be all that can be desired; but this can seldom be done. Nevertheless, very good Asparagus is often obtained by very simple means. Roots taken up carefully as above, and placed close together on a bed of leaves not less than three feet deep, and a frame or box placed over them, will be brought forward very well; and if after the crowns have started there should be a slackness of heat, a good lining of hot dung will renovate it much; but, in general, a bed of leaves will afford heat sufficient for two crops of Asparagus, especially if they be Oak, Beech, or Chestnut leaves. A little fine earth mixed with leaf mould may be put on the bed before the plants are put on, and the same over and amongst them when they are packed in; but the crown need not be covered more than two inches or so, unless a greater length of the head requires blanch

ing. Care in taking up and setting in the bed is all that is wanted; and if severe weather set in, let the bed be protected at night by some covering or other, and even in the daytime until the heads appear above ground it may remain in darkness. Nothing comes sooner into use on being forced than *Asparagus*, but the plants are useless afterwards. Those, therefore, that force a quantity each year, sow and prepare for it; but the inexperienced in such matters who have any worn-out old beds, may take them up and force them instead of throwing them away, and a very good return will be the result. *Asparagus* may also be forced in the ground it grows on; but the process is more slow and attended with a good deal of labour and is seldom done, as preparing a quantity of beds each year and letting them bear one or two crops in the ordinary season and then taking them up to force, is so much the most economical plan, that it is generally followed. Directions for making new *Asparagus*-beds having been given in former numbers of *THE COTTAGE GARDENER*, they need not be repeated here.

SEA-KALE.—Many of the properties of the last-named plant belong to this, the growth the preceding season determining in a great measure the quality of the shoots of next growth: therefore, only well-grown plants ought to be forced, especially for the first crop. This plant, however, differs from *Asparagus* in its adaptation for being forced in the ground where it grows. Pots of the kind prepared on purpose being placed over each head or crown, the space between them and over them is then filled in with some gentle-heating material. If dung, it ought not by any means to be rank, as too much heat is fatal to it at this early period of the season. Leaves are better; but if hot dung must be used, let the quantity be limited so as to merely warm the ground at first, and not to create a hot, unpleasant steam inside the pots covering the crown of the plants. But as there is always some difficulty with the first crop, it is often better to take up a few roots and plant them in deep boxes or some other suitable place where there is a little heat, and cover them closely up by another box inverted over them, or by some other contrivance to prevent the light having access to them, and in this way they will start, grow, and furnish heads sooner than if forced in the ground. The only drawback of this plan is, that it sacrifices the plants. This, however, may be remedied in the same way as is recommended for *Asparagus*—by sowing a portion each year. But it is only the first crop that I would advise to be taken up and forced in this way; the after ones may be covered with leaves, or dung, or any other heating material, and forced on the spot. Of course, when fermenting materials for that purpose are not to be had, taking up and stowing away in some dark corner must be resorted to. Very often there is some snug corner near the fireplace heating the glass structures: in this the boxes of *Sea-kale* may be placed, taking care, however, that they have the necessary amount of moisture—not at the root only, but also at the top, and with the latter perfect darkness also. A very good plan to insure this, when the plants are subjected to a dry heat, is to cover them up for at least six or eight inches with moss that has been chopped a little, and also that all insect life has been destroyed in by pouring hot water over it with a little salt added. This moss when cool may be laid over the boxes, and a mat thrown over that, and, being damped occasionally, the heads of *Sea-kale* will force their way through. An air-tight box inverted would answer the same purpose; but when the air is very drying it will find its way into such places, and the crispness of the vegetable is much impaired, as it is the confinement from all atmospheric influences that causes the blanching so necessary in *Sea-kale*.

RHUBARB.—Like *Sea-kale*, this, too, may either be forced in the ground where it grows, or it may be taken up and removed to some warm place. Perpetual darkness, so essential to the well blanching of the shoots of *Sea-kale*, is, however, not so necessary here—in fact, *Rhubarb* is better flavoured when allowed a little light, and when the atmosphere is not too much charged with moisture arising from the fermenting materials used in its forcing. It, however, requires more room. The root itself is a very bulky affair when taken up with a ball to it, and the stalks when well grown are upwards of two feet long; but as it is a deep-rooted plant, heated dung rarely penetrates low enough to start it satisfactorily into growth in December. It is, therefore, better to take up a few plants, and place them in some warm corner where they may have a little light: these will do for the first crop. The second and after crops may be had from plants in the ground covered up as directed for *Sea-kale*, only the covering up must be done much longer before the stalks are wanted than is necessary

for *Sea-kale*. *Rhubarb* is much slower in starting; but when it once begins to grow it yields its produce very fast. The best plants to take up and force are young ones with only one or two crowns each; large old plants with a ball and roots large enough to half fill a cart are not so easily excited into growth. Any of the early varieties will do; and as there is much difference of opinion of their respective merits, it is only necessary here to say that *Myatt's Victoria* (not by any means the earliest kind for out-door purposes), forces very well, and produces abundance of good stalks. But the old *Scarlet* is the general favourite for this purpose; the stalks, though smaller than the *Victoria*, are a fine red colour and are more attractive. But most kinds will force well, the only conditions being the same as those given for *Sea-kale*—not to start too fast at first, but after growth has commenced heat may be increased; but this is seldom necessary, as *Rhubarb* grows very fast when it once begins.

POTATOES.—There are many ways of obtaining young Potatoes; but perhaps the easiest way is to plant them in any spare box-frames that may not be in use, and place over them heap of leaves that might be stored away in some sunny corner; or, if some rough skeleton frame was made by rough poles inserted in the ground a few inches apart, and a rail with a straight edge fastened along their tops both at back and front, the latter somewhat lower than the other, so as to form a sort of pit about six feet wide and three or more deep, it might be nearly filled with leaves, and the Potatoes planted in the mould put on the top. Any description of covering that would exclude frost would do until the plants were up; after which they would want a little daylight more or less, which could not well be given them without glass. But there are many makeshifts this way, and the Potato will endure a good deal of hard usage but no frost: the latter must, therefore, be carefully guarded against by secure coverings of straw or anything that may be handy. Cold rains must also be excluded; and, whatever the covering may be, do not let it rest on the ground the Potatoes are growing in. If they be in one of the rustic pits above alluded to, something in the shape of rafters may be placed to take the bearings. The best kind of Potato for winter work is the earliest of the round kinds, each district having its own favourite one. Kidneys, though more admired at table, do not come in so early. Therefore, if you have a good, short-topped, round variety that is very early and prolific, this is the Potato to force, plant in drills about eighteen inches apart, and from eight to ten inches apart in the row; or they may be closer, as the luxury of a new Potato is too great to stint the quantity of tuber required to plant. More particulars will be given hereafter.—J. ROBSON.

EXPOSING FORCED VINES WITH LEAVES ON—SOWING *GAZANIA SPLENDENS*.

"A CORRESPONDENT" wishes to know whether Vines may be taken outside the vinery before the leaves are all fallen; and if *Gazania splendens* will grow from seed.

[You may expose in summer or early autumn your forced Vines if the wood is brown and hard, but not in the case of a late vinery. But why take them out at all? It is an old mistake.

Sow the seeds of the *Gazania*. You may have several varieties, but we could not say yet whether you would get *splendens* true as seedlings—most likely not. You must trust to cuttings for a bed of *G. splendens*.]

PORTABLE LEAN-TO ORCHARD-HOUSE.

ARE there any means of erecting a cheap portable forcing orchard-house, so that on my removing to other premises I might not be obliged to leave it for the benefit of my landlord? I propose erecting a lean-to one, 30 feet by 12 feet, after Mr. Rivers' plan; but all the descriptions for building orchard-houses in his admirable little work "*The Orchard-House*," are for fixtures, which are of no use to persons like myself, who are only temporary holders of premises.

I have in my garden a number of Peach and Nectarine trees, planted by a former occupier against a wall, which appear to be about five or six years old. They bore tolerably well this year, but are too luxuriant in their growth. Are they too old to remove and root-prune after Mr. Rivers' fashion?—A. TYRO.

[It is a misnomer to call your structure "an orchard-house:"

the addition of artificial heat renders it "a fruit-forcing-house." We presume you mean placing your house against a wall. If so, you had better consult your landlord, as you cannot well do without a ridge-board fixed there. If you do not place it against a wall, but make a fence or wall of boards, there is no necessity for mentioning such a thing, except that politeness is always pleasing. In either case your house may stand on wooden blocks placed on the surface of the soil some nine or twelve inches in depth, and two feet in length. On the top of these blocks place your sill; and a board hinged to the sill between each two blocks will furnish you with the means of ventilation at bottom; and a similar one would do at top, or even at bottom at the back, if your plants were to be low. Oak blocks would last many years if seasoned, and the bottom side charred at least; and then you may take up the whole any day, and not leave even a hole behind you.

The trees we would take up carefully and transplant, but without cutting the roots more than could not be avoided.]

PRUNING BLACK HAMBURGH AND GOLDEN HAMBURGH VINES.

In a small vinery I have 11 feet long, 9 feet wide, and with five rafters 10 feet long, are two Vines—the Black Hamburgh and the Golden Hamburgh, both of which were planted December 9th, 1858, and both cut down to the place where they enter the house. The first summer each sent up a rod to the top of the house, which was stopped twice. The laterals were pinched as is recommended for the first season. These rods were cut down last spring to the point where the rafters join the upright sashes. The Black Hamburgh has made two beautiful rods this season, and the Golden Hamburgh would have done the same; but I had the misfortune when tying the shoots to break one of them off, so I have only one left. This latter measures now two inches in circumference. I will now inquire how I shall proceed to supply new wood, and how many bunches I may allow to remain on each Vine next year without injuring them for future seasons? I propose pruning on the "spur" system.

Up No. 2 rafter are two rods of the Black Hamburgh now nicely ripened. I want one of these rods to furnish another shoot next season to train up No. 1 rafter. How many bunches of fruit may I allow to remain on the rod supplying both fruit and wood? and how many on the one for fruit only? How low shall I cut the rods from the top downwards? and will there be any difference in the pruning of these two rods?

Now for the Golden Hamburgh. How low shall I cut the single rod to supply another shoot? and how many bunches may I leave on so as not to exhaust the Vine? I have been told to shorten this rod two feet from the top of the house, but I am afraid this will not be low enough to start the lower buds sufficiently, and make the Vine bear as fine fruit at the bottom as at the top. I shall carry another rod up No. 5 rafter, over the doorway the season after next, so as to have three rods the same as the Black Hamburgh.

I intend planting another Black Hamburgh to train up No. 3 rafter this autumn, and hope in this way to get my small vinery nicely furnished. I ought to mention that the east end is glass, the other joins an adjoining building. The house has a south aspect. The border is composed of turfy loam, road scrapings, a little animal matter, and inch bones. It is well divided with pieces of brick, tiles, stones, &c.—A SUBSCRIBER TO THE COTTAGE GARDENER.

[There is no need for the slightest apology, your letter is not a bit more full than it ought to be. You need be in no fear about breaking your rods for the full length if you bring them down and place them horizontally along the front of the house, so that the whole rod may be on the same level. We do not think it would be prudent to keep these five rods at anything like their full length. If you did so you might have a good crop from them the first season, but they would most likely suffer in consequence always afterwards. The first idea that suggests itself is, that five rods are at least one too many in a length of eleven feet. The two Vines, therefore, would do. But supposing that you plant another Vine for rafter No. 3, and would thus have five rods in your house, this is how we would proceed if the Vines were ours. We would take one of the two rods which you now have up No. 2 rafter across at the bottom, and take it up No. 1 rafter. If you did not wish foliage or fruit to be on the cross

part between the bottom of the two rafters, we would pick out all the buds there. If any difference, we would select the strongest rod for this transposition; and, having done so, we would cut both rods down to less than half the length of the rafter, and for the first season we would be content with five or six bunches on each. Of course, all the shoots would be stopped above the fruit, or at a similar distance, if the fruit was removed or did not show, only the leading end shoots from each rod would be allowed to grow right on the same as last year. No other rod would be needed from the base unless you meant to supply No. 3 rafter from this Vine. If so, the lowest bud and the shoot from it must also be allowed to grow unstopped, and the laterals managed as you propose. If you plant another Vine this will not be required on the spur system of management. We would treat the Golden Hamburgh the same way. Cut it down to less than half the length of the rafter, keep it in a horizontal position close to the bottom of the rafters until the buds had all broken and grown a little, and then select the lowest shoot for taking across to No. 5, leaving it unstopped, and treat the leading shoot the same. We would not take more than five bunches from this Vine. Next season, if all goes well, we would let these older rods occupy fully two-thirds of their rafters, and the new ones one-half, and take a proportionately heavier crop. The Vines may thus last a lifetime, and more; but if heavily cropped at first, they will just be like a nice young colt that has had all energy driven out of him by being worked hard too early.]

FORCING.

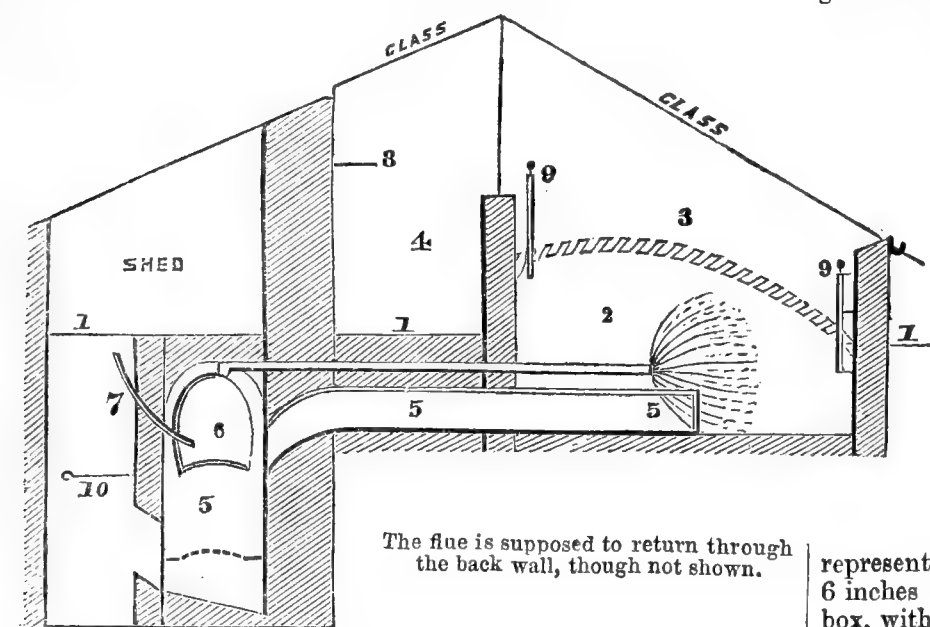
(Continued from page 107.)

FORCING PLANTS WITH FERMENTING MATERIAL IN HOUSES.—What has already been advanced has chiefly reference to having the fermenting matter sweet inside of a pit or house, and any kind outside the walls according to circumstances. There is hardly anything that is forced, however large the house, that would object to a heap of such fermenting matter inside the house during the whole of the growing period. The foliage relishes such sweet fumes amazingly. One thing only must be particularly attended to—either to leave on a little air at the top of the house all night, or to give a little before the sun strikes the house in the morning. For starting the buds of deciduous plants nothing is better; and there is no necessity for the heap being sweetened at first, provided it gets sweet before the buds break. For such purposes, for such plants as Peaches, the manure should be half sweetened before being put in; for Figs even less would do; for a vinery containing nothing but Vines we would take the dung as it came from the stable-door, and water it and turn it, just as recommended for a heap out of doors. I once had the privilege of managing a large vinery on this principle. There was no end of the manure to be had. An immense heap was made in the middle of the house. For a week or ten days, if you went inside the house, you would have to guard your mouth and nose; and so dense was the steam, that you could scarcely see two yards before you. Whilst so managed I never saw an insect of any kind in the house. By several turnings the whole heap was as sweet as the most enthusiastic Cucumber-grower would have desired, before a bud broke—generally about five weeks after the fresh dung was put in. That heap was frequently turned, and fresh additions now and then of nearly sweetened material added at the bottom until the berries began to colour, when the heap was allowed to dry on the surface, or perhaps made into a Mushroom-bed. By such means a house that had heating power to ripen Grapes in the beginning of September was made to ripen them in May. I found out afterwards, that in heating several places almost entirely with dung, and thus working it into small compass for carriage for the land, the proprietors escaped a great expense. In thus working the dung in heaps out of doors, so as to get into smaller compass for carriage, of course the heat thus given off was lost. Where, as in hunting establishments, &c., there is a vast quantity of such dung, and labour also is plentiful, almost anything may be forced by using it judiciously outside and inside.

USING FIRE HEAT.—In order to lessen labour to a great extent and to have a dry heat when necessary, heating by means of kilns, stoves, and flues come into operation. All of these are more or less suited for the purpose contemplated; the great evil connected with them all formerly being the excess of dry heat, the excessive heat near the heating medium, and the robbing the confined atmosphere in which the plants were growing of the

requisite amount of moisture. That moisture communicated and the heat regularly dispersed, any or all of these modes may be used advantageously, more especially in houses of small extent; and these compare very favourably with the fashionable mode of heating by hot water. An error prevails in supposing that the heat from a close hot-water pipe is a bit more moist than from a stove or a flue. The advantages are, that the heat is diffused in the house more equally, and there is less danger from unwholesome exhalations; but, heat for heat, it is equally dry, unless moistened by modes which are equally applicable to the ruder and simpler modes of heating.

HEATING IN CHAMBERS.—Even the now rather-fashionable mode of accumulating heat in chambers, or in masses of rubble and brickwork, is after all founded upon the old kiln system; and but for the expense of forming such chambers, there are few modes better where a regular bottom and top heat are required. The simplest mode, where fire heat is used, is to surround the flue or pipes with stones, &c., and to have the means of damping these stones at pleasure. One of the best houses of this sort that ever I met with was a wide house for Cucumbers and Pines at Shugborough, the seat of the Earl of Lichfield, Staffordshire; but though it answered most admirably and would soon have paid its cost, the first expense would hardly suit the proprietors of small gardens. Unfortunately I have lost my plan of this house, but the annexed is a rough section not far from the mark



from memory. 1 is ground level; 2, open chamber; 3, space for plants; 4, pathway at back; 5, furnace and flue, the flue going along the middle of chamber, and, if narrow, returning again and going up a chimney near the fireplace—or, if wide, going once through and out at the other end. For a house forty feet long, or so, either of these modes would do; or the flue, after passing along the centre, might return in front at the top of the arch, so as to tell upon the atmosphere of the house directly. 6 is a small boiler, which may be set solid, or something like a washhouse copper, with an open tube at the top three inches, or so, in diameter—that passes at once to the middle of the chamber, and there allows the steam to escape; 7, a pipe from a supply-cistern furnished with ball-cock, or at least always supplied with water on the same level as boiler; 8, shelf for Cucumbers, &c.; 9, small open pipes, furnished with plugs communicating between the chamber and the atmosphere of the house—these openings should be placed back and front every four feet in length; 10 is a damper, which may be put across a couple of inches or so below the bottom of the boiler when it may be desirable to have dry heat alone, or there may be a superabundance of moisture. That, however, will very seldom be required. To secure that object in the house referred to, a small flue from a furnace at the other end of the house was run along the front on the top of the arch, but it was seldom used. Everything seemed to delight in the heat through the pipe-openings. When under the management of Mr. McMurtrie I have never seen such crops of Cucumbers, &c., before or since, unless in the case mentioned at Kimpton Hoo last season; and yet, with the exception of the flue instead of a mere fireplace, and the open vapour pipe which thoroughly neutralises the dry heat, there is just the old principle of the

kiln. The above may give an idea how to work; but I have seen many attempts to follow the same plan fail, because the chamber was *too small*, and therefore the moist heat admitted was too scalding.

IRON STOVES.—Such a plan, however, as the above is not likely to be followed in any first attempt; but in these days of chambering and giving bottom heat it may not be amiss to allude to the most successful specimen I have met with. There are almost every week inquiries about iron and brick stoves for heating; and for merely keeping out frost, as I have repeatedly shown, nothing answers better in small houses if a little care is exercised. I do not think they can be rendered available to any great extent for forcing purposes if they preserve the real character of stoves only. Even for keeping greenhouse plants and giving a little assistance to Vines, &c., one small iron stove, from 30 to 36 inches in height and from 9 to 12 inches in diameter, can hardly manage more than a lean-to house 10 feet wide and 25 to 30 feet long. If it were not for the first expense, the larger the stoves are the better will they act. I mean the outside covering, for unless in extreme cases, I would not use a stove that had merely a thin casing of iron and the fire at the bottom. In such a case a part of the iron will soon get red hot, and neither plants nor men can thrive in their vicinity. The air is not only thoroughly deprived of its moisture, but all vegetable and animal matters suspended in it are also thoroughly burned; and the fumes given off will kill the plants near the stove, when those at the extremity of the house may pass uninjured. All stoves used in plant-houses should have a small fire-box standing quite free from the sides. A good stove for such a purpose would be one of the simpler forms of Dr. Arnott's, as shown in fig. 6, intended to

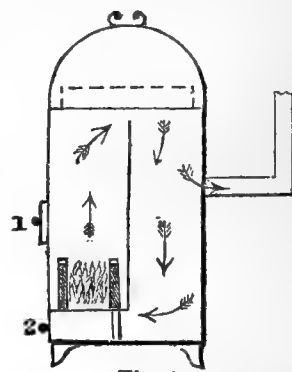
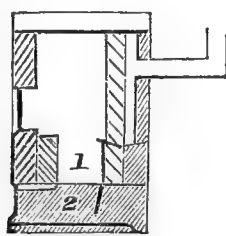


Fig. 6.

represent one about 3 feet square and a trifle more than 4 feet 6 inches in height. The small fireplace is enclosed in an iron box, with thin firebricks up the side. An iron division comes down not quite in the centre, and leaving a space open top and bottom for the heated air to go round and round as well as out at the smoke pipe. 1 is the feeding-door made air-tight; 2, the ash-pit door, also air-tight, with a small valve in it to turn round to regulate the draught for the fire. A very small quantity of fuel will in such a stove give out a long, continuous heat; and being placed in the centre of a small house, the heated air will ascend and pass along next the glass to each end, whilst the cold air will keep coming along the bottom or floor, to be brought again and again in regular rotation against its sides—sides which, though hot, will never become dangerously warm if the valve at the ash-pit is attended to. When fairly lighted and the iron warm enough, a small hole at the valve, of the sixteenth of an inch in diameter, will give enough air to support a slow combustion. When the heat declines give a little more air. To keep the air moist, place a pan of zinc or other metal two or three inches deep on the top, supplied with water, or the top may be so cast. If desirable, the pan may be concealed by an open, conical, light cap. The vessel and the top are shown in dotted lines. The plate at top will be so much hotter than the sides, that the top may be formed into a small boiler, end pipes with hot water taken from it, or a tank of water be heated. The chief recommendation of such a system would be the great economy of fuel, from the heating medium being all in the house. Coke broken small is the best material for such stoves. To insure draught, with a small or no aperture at the ash-pit, after combustion has fairly commenced, the smoke pipe should not proceed many feet in a horizontal position, but should soon rise upright or in a slanting position against the back wall of the house before going outside; and the longer the pipe the less heat will be lost. Previous to cleaning out the ash-pit a slight damping of the ashes will be necessary.

BRICK STOVES.—Owing to the great heat apt to be produced by iron stoves by careless management, and also their first expense if of large size, brick stoves formed less or more on the simple principle of Arnott's, began to be introduced into our small greenhouses, and were even used for forcing, especially when a small boiler was placed on the top of them. Mr. Rivers has the honour of directing public attention to the economy of such stoves—at least I do not recollect hearing much about them until reading his remarks on the subject accompanied with plans for forming them, nearly fifteen years ago. These plans are also given in "The Orchard-House" by the same author, printed in 1860. It would not, therefore, be fair to copy them; but keeping the principle of the Arnott's stove in view, and substituting solid four-inch brickwork for the iron, there will be little difficulty in making them. Mr. Rivers uses no division, as in *fig. 6*; but the fireplace or firebox is in the middle instead of one side, and above the firebox a firelump is set up about three inches from the mouth of the smoke pipe, a similar space being left at the ends, which thus acts something like the partition in regulating the draught. Mr. Rivers tells us that for heating a house 30 feet long by 12 feet wide, the stove should be 2 feet 4 inches square, 3 feet 10 inches high; and the firebox should be 8 inches over and 8 inches deep. For a larger house, a larger square and a firebox a few inches larger would also be necessary. In forming the size named, lay out a space in the middle of the house about 2 feet from the back wall, and 28 inches square, lay that with one course of bricks and mortar, brick on bed. On this at front and in centre of it, fix your ash-pit door that will fit tight with a small ventilator in it, mark out a space from seven to eight inches wide, and to within eleven inches or so of the opposite side: that will be the base of your ash-pit. Build all round it until you get as high as, or a little above the height of, your ash-pit door; then place bars across for the bottom of the fireplace, form your fireplace of firebricks eight inches square and that deep, or of four firelumps of the size of eight inches deep, finish with brickwork outside, and above the height of the fireplace place your double door for feeding. Use brickwork for the necessary height above them, and cover with a plate of iron three-quarters of an inch thick. A firelump should stand two or three inches in front of the draught pipe to equalise the heat, &c., and the smoke pipe should not be far from the top. With such stoves Mr. Rivers finds the horizontal pipe should not be long, but that it should enter an upright or sloping flue at the distance mentioned. He gives moisture by an evaporating-pan of water; and by fixing a small cistern, or rather boiler, on the top, he can easily heat pipes or tanks of water. *Fig. 7* shows a rough vertical section through the centre, on much the same scale as the others—viz., five feet to the inch, only the openings by the sides of the firelump equal to those in front of the smoke-pipes are not shown.



1 is firebox.
2 ash-pit.

Fig. 7.

The best example I have met with of heating a long house, and pretty well forcing it too by means of a brick stove, and the pipe carried along the back wall for fifteen or twenty feet, was at the nursery of Messrs. Lane, at Berhampstead, and was noticed some years ago in *THE COTTAGE GARDENER*. I do not recollect the exact great length of the house, but the following figures will give a good idea of it. In *fig. 8*, the line A might represent

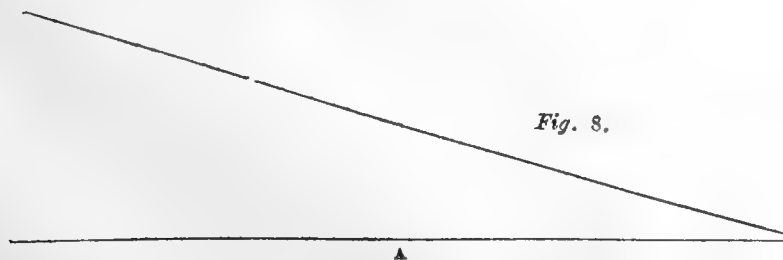


Fig. 8.

a level line, and the line B would represent the sloping ground

on which the house was built. I believe the success in heating such a large house, some eighty or more feet long, was partly owing to the slope of the roof and foundations.

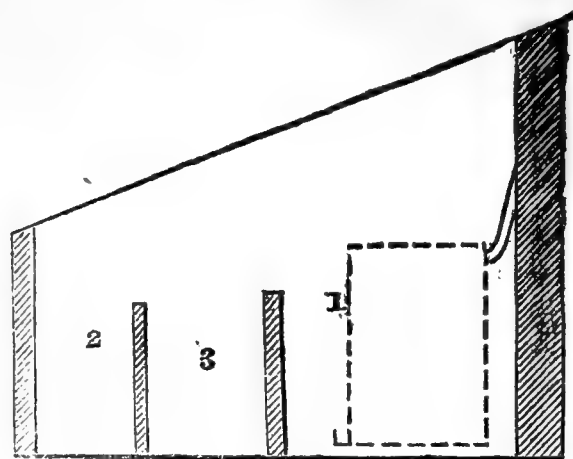


Fig. 9.

Fig. 9 is the section of this sloping house. No. 1 is a bed at back in which Figs, &c., were plunged; 2, a narrow bed nearer the front for lower things; 3, is the pathway. The dotted lines in bed No. 1 are intended to represent the brick stove placed free of all walls, but near the back one at the low end of the house. The pit, No. 1, not coming to within four or five feet of the end, there is a free communication from the pathway round the stove. The door also opposite the pathway enters at that end. Now, keeping in view that from the stove the glass roof rises above the pits regularly on a slope, like the line B in *fig. 8*, and you will at once see how *naturally* the heat given off by the stove rises and passes along until it gets to the extreme end; and then keeping in mind, that the footpath between the beds slopes in an equal manner all the way down to the stove, you will find that the action of the stove will as naturally draw the cold air towards it, just as that close to it becomes rarefied and ascends. Here, in fact, is an exemplification of the Polmaise system of heating without making drains and flues on purpose (pretty well as expensive as making fire-flues at once).

We could hardly pass these stoves by when they may just suit the wants of many with humble means; and besides, we feel confident that the person who can manage them satisfactorily will never have any difficulty in regulating flues or hot water. In fine, regretting I have not seen the stoves of Mr. Rivers, were it not for the width, I would prefer from the working of such stoves as I have noticed a rather close following of the plan shown in section 6. In a large stove, and water to be heated on the top, the lower the firebox was the better; and then, instead of a firelump above the firebox, we would not object to solid brickwork all round except at the doors, and a damper in the flue which should never be close, but leaving only an inch space or so when the fuel became red. In small stoves constructed as above, and the ash-pit door well looked to, there would be no need of a damper. I did not notice that Mr. Lane was particular with the ash-pit door; but then for such a large house he wanted a good draught. Neither do I recollect of any vessel for vapour; but the cold air would get moist enough in passing along the damp pathway. Such brick stoves should be built a month before lighting a fire. The firebricks or firelumps should be joined with fireclay mortar, though I have found good lime mortar little inferior, and the rest of the brickwork be joined with best mortar and small joints. The bricks should be new, hard-burned, and soaked in water before using until no air-bubbles rise.

R. FISH.

(To be continued.)

TREATMENT OF OLD DEBILITATED ORANGE TREES AND CAMELLIAS.

WE have some old Orange trees which apparently have been declining for years; they have lost most of their foliage. They are growing in large wooden boxes of sodden-looking soil, and I believe the roots are in very bad condition. Having no house large enough to spare for them in spring, I thought of shifting them into smaller boxes and plunging these in a sweet hotbed out of doors; or would some kind of canvass tent over them be advisable?

We have some old Camellias much in the same state, their foliage having anything but a green, healthy appearance. Would

it be advisable to put these in a vinery as soon as started without potting for a while, or should I pot them first?—A SUBSCRIBER.

[We would, in April or May, do with the Orange trees exactly as you propose, and use a calico tent for them; clean, stout, hexagon, Nottingham netting, or tiffany, or frigi domo would do. Treat the Camellias the same, or earlier if the Vines are forced. No goods will be done whilst the roots are in poor, sour soil.]

FORCING FRUITS AND CUCUMBERS TOGETHER—TANK HEATING.

I AM now building two fruit and plant-houses. The aspect is due south; the back wall is 10 feet high; the roof is formed with fixed rafters about 14 feet long in front, with a short span-roof about 5 feet 3 inches wide at the back with sliding sashes. The ventilation is provided for by these sliding sashes, and by ventilating shutters in front, each 5 feet long and 1 foot wide. The heating I propose to effect by a furnace and flue running round the house; and I wish, if possible, to place a small boiler over the furnace to supply a wooden tank 17 feet long by 4 feet wide, to be used for propagating and forcing, and also for growing Cucumbers. In the house nearest the furnace I propose to grow six Vines, planted six feet apart (which I conclude will not shade the house too much). Against the back wall I wish to grow Peaches, Nectarines, Apricots, and Figs (throughout the whole length), and on the border between the tank and path I should grow fruit trees in pots, or planted in the border, and a few Camellias, Azaleas, and other flowering plants.

In the cold fruit-house next the above I am not thinking of growing Vines, but my idea is to grow Peaches, Apricots, and Nectarines on trellises, and I should be glad to have suggestions as to how this should be effected without shading the back wall too much, and also as to the number of trees required to fill up the space—viz., 35 feet by 11 feet (up to the path).

I should be glad of information and advice on the following points:—

1. I have a brewing cooler 12 feet long, 4 feet wide, and 7 inches deep, which I propose to have lengthened to 17 feet, and then to use it for a tank. It is quite water-tight, and sound, made of the best deal. Will it be suitable for the purpose? if so, must it be lined with lead?

2. Will you recommend me a small boiler to heat this tank? It may as well be sufficiently large to heat a longer tank if required.

3. I want a list of six good Vines, also of a good variety of Peaches, Nectarines, Apricots, and Figs, for back wall, trellis, pots, and border, for the heated and cold house.

I have omitted to mention that the front wall is built on arches, that the glass is 21 ozs., the size 20 inches by 12 inches, the rafter 5½ inches by 1½ inch. The roof is supported by iron ties, with uprights of 1½ gas pipe paid under purlines. The stoke-hole is to be used for growing Mushrooms, Sea-kale, Rhubarb, &c.—G. W. H.

[We regret to throw the least cold water on your plan, but we must give you the same answer as we gave some weeks ago to another correspondent—to the effect that we should only be leading you astray if we held out the hope that you could grow Cucumbers and Apricots in the same place. You will only do with Vines and Cucumbers, either on the principle that you introduce your Cucumbers after the Vines are broken, or have means, as lately detailed, for taking these Vines outside when the wood was ripened. The first thing we would advise you to do would be to divide your heated or forcing-house by a partition of wood and glass, making each 17½ feet long. We presume your tank is to be over the flue, but free from it. From the division you will thus have a warmer and a colder house—in fact, you can keep the latter back by giving more air, though the same flue goes through both houses. In the first house we would plant as Vines, the Dutch Sweetwater, for earliness, and two Black Hamburgs, or one Black and one Golden Hamburg. On the back wall, if we did not also have Vines, we would prefer three Fig trees, one of White Marseilles and two of the Brown Turkey. The centre floor of the house to be devoted chiefly to forcing flowering plants, or a few Peaches in pots, brought after they were set from the late house. In the second house we would recommend one Muscat of Alexandria, one of West's St. Peter, and one of Hamburg Muscat Vines. The back wall of this we would cover with two trees, one of Noblesse or Royal

George Peach, and one of Elruge Nectarine. The floor to be filled with four or five trees in pots. The front of the house we would plant with four trees and low trellis, such as Barrington and Walburton Admirable Peach, and Violette Hâtive and Pit-maston Orange, or Rivers' Orange Nectarine. The back wall we would devote to Apricots, and would use chiefly the Moor Park, giving them abundance of air. If the top of the front trellis is 4 feet in height and 3½ feet from the back wall, this wall will bear right to the bottom. Now as to the questions—1. The cooler will answer admirably for the tank only it will be too deep, but you may let only 3 inches of water or so in the bottom, and cover with slate. If the slates were put on at that depth, or four inches, the sides of the cooler would do for an edge for the propagating-bed. There is no necessity for lining with lead, if water is kept always in it; there will be no danger of leaking if the sides are well joined. 2. A small Thompson's retort boiler, or a small conical one, will suit your purpose. Two small inch-pipes will do for going to the tank. 3. Answered before. There will be no difficulty with the boiler in any case, but the action will be better if the top of the boiler, however placed, is a foot or so, at least, below the bottom of the tank.]

EARTHENWARE PIPES FOR HEATING WITH HOT WATER.

In compliance with your request for further particulars respecting the glazed earthenware pipes for hot water, I shall begin with the boiler. This is a truly "knotty point," scarcely any two professional gardeners agreeing as to which is the best. Neither shall I venture at present to pass an opinion on any particular boiler; very much depends on the setting—a great deal more than is generally supposed. The great point to be aimed at is the largest heating surface, with the consumption of the smallest quantity of fuel, and that no heat gets away without being made serviceable. A boiler that requires too much attention in firing is a nuisance to an amateur. I have three different boilers, and unless I am forcing hard they will do with firing once in eight to ten hours. They have been twelve to fourteen hours without being looked to, and the fires were then not out.

I burn coke, which I consider far preferable to coal; it is cleaner, gives a greater heat, and will burn very much longer than coal.

Again: The prices charged for boilers are too high, and with the setting make rather a formidable amount to start with—quite enough to deter many amateurs from even thinking of a hot-water apparatus. I am having a simple boiler constructed to meet this point—one that will be very compact, will require little setting, only just sufficient to keep it steady, and will be of only a moderate price. As soon as I have tested it I will let you know the result.

Now, to proceed to a few particulars. Having obtained your boiler either already fixed, or, if a new one, partly fixed, proceed to put on any bends, elbows, T-pieces, and tops, all iron, that are required first next to the boiler; packing the joints first with two strands of spun yarn plaited together and steeped in red lead and oil, well caulked in, afterwards filling up with Scotch cement, and about one-third iron filings well kneaded together to the consistency of tough dough with boiled linseed oil. This must also be well caulked in; caulking in two strands of spun yarn as before on the top to keep all firm. If these joints are well made they will be as firm as the pipes. I prefer joints made this way to those made with iron filings and sal ammoniac. The former can be chipped out if any alteration is required; the latter cannot.

The iron piping that is attached to the boiler must be finished off with an iron socket, in which the spigot end of the first earthenware pipe is to be inserted, both flow and return. The reason for this peculiarity is, that iron will expand and contract more than the earthenware piping. So that by inserting the earthenware piping in the iron socket to start with, the earthenware piping is not affected by the extra expansion and contraction.

Then proceed to lay the earthenware piping, packing the joints (this is the important point) for the first half with the Scotch cement, the same as used for the iron piping, *pushed in firmly and evenly* with a piece of hard wood, so that it will be watertight, and the remaining half of the socket filled up with Portland Cement made to the consistency of putty, and put in firm and

well with a putty knife while it is wet, and rounded off outside, or over and above the straight edge of the socket. No spun yarn is to be used in these joints. To be concluded in my next.
—G. DIAMONT, *The Lodge, Flixton, near Manchester.*

HEATING A GREENHOUSE FROM KITCHEN FIRE.

"In the multitude of counsellors there is safety;" but, sometimes, indecision. R. Fish will be also much obliged to Mr. Allen for his plan alluded to at page 87. Though if he has his boiler, &c., in the kitchen, probably, it will not be a favourite with the kitchen people, nor a pleasant thing at all times, if a shoemaker comes poking in to look after it. In all such circumstances there must be a little smoothing and oiling of difficulties. The plan proposed for such an amount of heating as a large greenhouse and workshop he feels pretty sure will answer. Except in severe nights, there will hardly be any extra attention required at the kitchen fire. The heat conveyed can either be neutralised by air or be prevented coming by emptying the flow-pipe in the greenhouse, or shutting off the circulation by a stop-cock, which had better be in the lead pipe after it enters the greenhouse. If the flow-pipe there is empty, which it may be all the summer, the boiler will always be full so long as there is water in the return-pipe; but with water merely in that pipe there will be no trouble with all the heat that will come to the story above. There is one thing, however, which R. F. meant to have stated in page 21, and which he had omitted, and which would make the whole more perfect. Supposing the flow-pipe to enter the greenhouse at the west end, a common cock like that for a beer-barrel could be fixed there, so that the flow could be shut off at once when heat was not wanted; but what he failed to say was, that behind this cock, a foot or more nearer the boiler, a small quarter-inch gas pipe should be inserted, and the open end two feet higher than the supply-cistern, be turned either into the chimney or outside the wall. The end of this pipe should also be turned down to prevent dust getting in. It would be best outside the wall, or even elevated four feet or so against the end wall of the greenhouse. The vapour escaping will be trifling. This will make all quite safe and enable heat or no heat to be had just as required. However, if our correspondent has not commenced, he had better wait for Mr. Allen's plan and adopt it if he thinks it best. If his pipes can be placed on a level in the greenhouse, &c., the hard-burned earthenware pipes spoken of by Mr. Diamont will do as well as any. The first hot water in a hot-house seen by R. F. was done with common earthenware. Wait and hear what he says too. We are always glad of such kindness.

MANCHESTER FIELD NATURALISTS' SOCIETY.

THE third of the winter series of soirées in connection with this Society took place on the 15th in the Library Hall of the Athenæum. The company numbered about 270 ladies and gentlemen, and included most of the leading naturalists of the city and neighbourhood. The hall was supplied with large tables, upon which were displayed numerous glass cases of the most beautiful and interesting insects known to entomologists, both British and foreign, the whole contributed by members of the Society. Nothing could exceed the richness and variety of the exhibition. There were butterflies of the most gorgeous and dazzling colours; beetles of more than metallic lustre; and there was a large case of those exquisitely delicate little creatures denominated Tineidæ, kindly lent by Mr. Eddleston. There were numerous specimens of the workmanship and products of insects, as well as illustrations of their architectural and constructive ingenuity. There were also exhibited ants' nests constructed of clay, many kinds of galls, a splendid series of specimens of silk, from the egg of the worm up to the perfect material of the manufacturer, cochineal, and various other valuable substances which we owe to the instincts of the beings that make up the vast realm which natural history calls the world of insects. Upon the walls there were numerous drawings illustrative of entomology, and several devices wrought in insects, principally butterflies. The chair was taken by Mr. John Watson. Mr. Joseph Sidebottom read an excellent essay upon the objects, rewards, and pleasures of entomological studies, showing how forms deemed insignificant and worthless were of consummate interest and importance to man, whether as providing him

valuable substances, or, as enemies and depredators destroying, in the shape of blight, during the caterpillar state, the produce of the garden and farm to an irremediable extent. There was a goodly array of ladies present, and the soirée was a success in every point of view.—(*Manchester Examiner.*)

GAZANIAS.

THREE years ago I was visiting a friend at Leamington, in the month of October, and I saw in the garden a most brilliant bed of *Gazania* in full flower. I was so charmed with this golden-looking bed, that I ordered immediately some plants of it, first from one nursery garden in Edinburgh, and then from another, and to my utter disappointment neither can be the same as those I saw at Leamington. The plants are strong and healthy, but not a flower on either, which completely destroyed the beauty and uniformity of my flower garden. I enclose you leaves of each of the plants I got. Will you have the kindness to give the names, and also the name of the right bedding sort in your next number? Seeing the one at Leamington so hardy and in such beauty, I thought the *Gazania* would be an acquisition to our northern flower garden; but thus are we constantly subject to disappointment from the nurserymen, both in flowers and fruit, which, to say the least, is a great pity. The time lost is more than the money.—A CONSTANT READER.

[No one in particular is chargeable in this matter. Every change of fashion, in every degree on the social scale, brings about similar results, and none can help or prevent them. We too had seen an October bed of such *Gazanias*, and much about the same time. Seeds of rigens were soon obtained from the most celebrated firm in London. The Waltonian Case soon put us in possession of *Gazanias* enough for a similar bed, but not a single seedling of rigens was among them, the whole packet being of the same kind as that from which one of your leaves was plucked—the one with the leaflets coming out of both sides of the main leaf, which is *Gazania pavonia*. Your long entire leaf may be from *Gazania uniflora*, or from *Gazania splendens*, both have most of their leaves in that style. If the flowers of that plant are plain yellow it is *uniflora*. If they have the purple rings set with brilliants it is a *Gazania splendens*, and that is the real kind for beds. It blooms from May to October, just as you had seen the bed at Leamington; but it was very much better in the very dry and hot summer of 1859 than in the cold wet of this season.]

PYRETHRUMS AS LATE AUTUMN FLOWERS.

THE enclosed bloom (*Pyrethrum multiflorum*), is one of Messrs. E. G. Hendersons' imported varieties from Germany. I enclose it, as I believe that it is not generally known that there is a class of flowers so valuable at this time of year, or which keeps in bloom so long. The accompanying blossom has been on the plant in its present state for more than six weeks. You will perceive it is still fresh, and looking likely to last for some time had I left it on the plant. I fully coincide with the views of Messrs. E. G. Henderson, when they say *Pyrethrums* are valuable additions to the flower garden.—*Pilsby Nursery.*

[We "fully coincide" with you and with all who admire the new *Pyrethrums*. We believe Mr. Beaton has some notes on them from Mr. Salter's nursery; and we refer you again to the "Illustrated Bouquet" for the double *Pyrethrums*.]

GISHURST COMPOUND FOR ORCHARD-HOUSE TREES.

YOUR correspondent "T. S. P.'s" experience of the action of Gishurst Compound on fruit trees at rest differs so much from mine, that I beg the favour of leave to ask him the strength he applied it, and whether it was before the great frost of 22nd October last year.

My orchard-house trees of all descriptions of fruit were last year most liberally anointed with a solution of eight ounces to the gallon of water, and in case of Pears infested with the hard-to-kill mussel scale, the Gishurst was applied in the strongest possible form—that in which I have found it act best against American blight on Apple trees—viz., by means of a wetted brush rubbed on the Gishurst cake till a stiff lather was formed,

and applied in this state over stem and shoots. My trees set far more than sufficient of blossoms.

Until Gishurst had established its character, it was a regular scapegoat. When anything went wrong with any of my friends' trees, it was invariably laid to the Gishurst, and a bitter complaint came to me. However, in most cases, the true cause was afterwards traced out and honestly admitted.

I never recommend any application without having first carefully tested it, and believe that eight ounces to the gallon cannot do mischief if the wood be at rest; if not, two ounces are sufficiently strong.—GEORGE WILSON.

PAMPAS GRASS NOT FLOWERING.

I HAVE a plant of the Pampas Grass about four years old. Last year it was as fine a specimen as could be desired and flowered magnificently. I did not meddle with it through the winter; but in the spring, on finding it had been severely cut by frost, I cut it in to about a foot from the ground. I fancied it was dead; but late in the summer it put forth grass, but no flower, the grass being very scanty.

Will you inform me how to treat it now? The old stems of 1859 still remain about a foot from the ground, and are barely hidden by the grass of the current year. Should it be cut down close to the ground, or taken up and divided?—A SUBSCRIBER.

[Was your Pampas Grass fed with liquid manure in 1859? Most of those that were have suffered severely last winter like your plant. What you must do now is to make it quite safe from frost this winter as it stands; and at the beginning of April take it up with all its roots, and divide it into as large plants as possible, and keeping as many of the live old roots as you can to begin afresh, but on no account put the young stock in heat unless their roots are very good indeed. Any strong, old plant may be so treated for increase.]

GOOSEBERRY TREES NOW BLOOMING.

A CORRESPONDENT writing from the neighbourhood of Shrewsbury, says, "We find (and it is the case elsewhere in this neighbourhood), that all our Gooseberry trees are coming into flower. Can you account for this? I fear we shall smart for it next summer."

[This is one of the most singular consequences of the late exceptional season that has been brought to our notice. We presume that near Shrewsbury, as elsewhere, the inclement summer sent the Gooseberry trees early to rest. We know many places where they were leafless in September. Then the increased temperature of October and early November would easily arouse the trees into prenatural growth, especially in sheltered places.—EDS. C. G.]

COCOA-NUT FIBRE.

At page 109, in your last publication, in reply to a correspondent, we are informed that this article is only to be obtained at Kingston-on-Thames. In large quantity this is probably correct; but to amateur Fern cultivators it may be well to say that Cocoa-nut husks are obtainable amongst the Whitechapel Jew fruit dealers, and often in Covent Garden, sufficient for small growers like myself. I can only say that for a shilling I got enough for the wants of the season, with only the trouble of chopping up the husks.—T.

SPERGULA PILIFERA CULTURE.

I AM one of the few who have been successful in the cultivation of *Spergula pilifera*; and thinking that a few hints, with the result of my experiments, might be acceptable to those of your readers who are about to lay down or form a lawn, has led me to communicate my experience.

I began in July, 1859, when it was very hot indeed. I sowed seeds on one piece, which vegetated freely and made good plants in a year, and is now a thick turf but rather yellow. I am not at all surprised at that; as I never prepared the ground, but sowed the seed on the hard surface after taking off an inch of grass turf.

In September of the same year I planted two plots more—one with *Spergula pilifera*, and another with *Spergula pilifera* and *saginoides* mixed. The former I feel quite sure can be second to none; for it is really beautiful and admired by all who see it, and pronounced to be even more than a perfect substitute for grass lawns, as the worms find it impossible to raise their hillocks through the thick wiry turf, and sweeping and rolling are dispensed with, as well as mowing, &c.

The latter plants grow freely together; but *saginoides* being more luxuriant than *pilifera*, soon overgrows it and kills it. This shows how careful one ought to be in making a purchase; for there is not the least doubt that, as *saginoides* is so fast-growing and large stocks of it easily propagated, it will be found amongst what is too often called *pilifera*. I am sure mine is the true sort, as I had it from the original stock at Forest Hill.

The last piece was planted in February last with inch pieces a foot apart. In May it looked as though it would die soon; but I did not give it up, as the rest had done well close by its side. I then cut a lot of evergreen branches about a foot high, and stuck about between the plants, and left them there until I was sure that the roots had gone down a sufficient depth to be able to support their creeping branches beneath the scorching sun; and those very pieces which were then only an inch square are now very nearly a foot square. I also find that it grows as well without rolling as with it. I may just say I am so well satisfied with the merits of the little plant, that I have marked out another plot to be planted very soon.—LUNA, Canterbury.

ORCHARD-HOUSES AND PEARS IN THEM.

At the meeting of the Fruit Committee of the Horticultural Society on the 13th inst. there happened to be two fruit of the Baronne de Mello Pear from the Society's Garden at Chiswick. These were so much finer than specimens of the same sent from the same place, that some inquiry was made as to the circumstances under which they had been grown; and a tree in a pot in the orchard-house was found to have produced them. There were but two fruit, and one of these was quite past: there was, consequently, only one to divide among several fasting members. Those who were favoured with a slice will not easily forget its exquisite refreshing flavour and its melting nature, as it seemed instantaneously to dissolve in the mouth. In the large collection of Pears tasted on that day there was not one to compare with this orchard-house Pear.

In the article "Orchard-Houses," No. 633, page 88, paragraph 5, read "lean-to houses are to be preferred for *such* places" instead of "most." In the same paragraph read "*sun* heat" instead of "dry heat." Correctness is most necessary in writing about structures, however simple.—T. R.

ORNAMENTAL BULBOUS AND TUBEROUS PLANTS.

UNDER this title the Messrs. E. G. Henderson & Son, of the Wellington Road Nursery, St. John's Wood, London, have just issued a monograph of the same size and form as their "Illustrated Bouquet," and which may be bound in one of the volumes of that work, as a useful addition to our knowledge of the best kinds of bulbs or tubers in each genus, from *Achimenes* to *Zephyranthus*. The work is arranged alphabetically, and embraces hardy, half-hardy, greenhouse, and stove bulbs and tubers, giving instructions on the general management of the plants in each genus, and a list of the most popular kinds in each, together with valuable rules and suggestions for the best methods of grouping hardy bulbs in flower-beds or borders, and for the forcing of such kinds as are best fitted for the process; also, the kinds of soils most suitable to the various bulbs and tuberous plants. We hail this practical work with pleasure, and recommend it to our readers as a ready and sure guide in the management of a class of plants which are not at all so well understood among a large class of cultivators as their uses and the gorgeous splendour of the colours of many of them would lead us to desire.

We are not told how the work is to be obtained, or upon what terms; we can, therefore, only refer to the firm as above.—D. B.

VARIETIES.

A MONSTER PETRIFIED TREE, 700 OR 800 FEET LONG!—

Some doubts having been expressed as to the truth of the discovery said to have been recently made in the Black Rock region, of a petrified tree of some 700 or 800 feet long, J. E. Stevens, the Captain of the late silver prospecting expedition in that region, and who fathered the wonderful story, writes to the Marysville Democrat on the subject. He says—"Our party of thirty-five men encamped at the lower end of what we termed the Little Canon, about three miles from which we found this famous petrification, and which is truly a great curiosity and a wonder of the age sufficient to arouse the credulity of those who passed through the 'High Rock Canon in 1849.' At a short distance from this monster of a former age, it seemed to us to be a well-defined line of drift wood deposited along the line of high water mark of some ancient river whose bed is now an elevated mountain ridge; but on closer inspection we unanimously pronounced it one tree, as we found it distinctly marked from the upturned roots to its forks, and its two well-defined forks to what was, when standing, an altitude of 666 feet, or 222 such steps as a western frontier man takes when stepping off his distance to shoot at a target, or any man would take in pacing off a Turnip patch. At about 400 feet from the roots the tree is divided into two parts, or forks about equal in size; and at 520 feet from the root I took off a specimen from one of these forks, having on its surface at the time the outer and inner bark of the tree, and which specimen is now in the office of Dr. Thompson, on D street, between Third and Fourth. From the curves of the lines of growth, we estimated the diameter of the branch from which it was taken to be from 8 feet to 12 feet, and this, bear in mind, at a distance of 520 feet from the root of the tree, and only half the tree at that. This estimate may be too high or it may be too low, but in the height of the tree we cannot be far at fault in saying that it measured when standing some 700 feet or 800 feet in height." Captain Stevens adds that J. B. Dorr, lumber-dealer, Captain McKenzie, formerly of the steamer *Petaluma*, and several other gentlemen of undoubted integrity, who reside at San Francisco, will not only confirm the truth of the existence of the petrified tree, but show specimens thereof. It was the general opinion of the company, looking at it, that it was from 40 feet to 60 feet in diameter. Enormous tree! Captain Stevens thinks it is of the same species as the trees of the Mariposa. Fragments of other trees of the same kind, but smaller, are visible here and there—stumps and butts of 30 feet in length—all petrified; and it is more than probable that a little excavation would discover a vast primeval forest there buried. It seems strange that the remains of a great forest should thus be found in a country now wholly destitute of any sort of living growth whatever, except Sage, Brush, and Greasewood, for a hundred miles around. In the same place the company found the shin bone of a man petrified, and the upper jaw of a grizzly bear, but twice as large as the jaw of any grizzly bear ever seen in modern times.—(*Boston Cultivator*.)

TRADE CATALOGUES RECEIVED.

A Descriptive Catalogue of Conifers, Ornamental Trees and Shrubs, &c., by John Cranston, King's Acre, Hereford, is a capital Catalogue, and contains all the newest introductions.

A Catalogue of Roses and Nursery Stock, grown by Dillistone and Co., Sturmer, Essex, contains a good selection of good things.

TO CORRESPONDENTS.

BUPHANE DISTICHA (*W. W. B.*).—If true to name it is hardly worth the trouble of growing. It is a mere old-fashioned botanical bulb from the Cape, and requiring a cold frame treatment, beginning to grow in September or October, and resting from May. But the easiest way to kill such bulbs is to grow them in strong heat. Use a sandy loam only for it.

CAMELLIA LEAVES BLACKENED (*P. J. H.*).—The black gummy matter on the upper surface is most likely caused by the aphid. Fumigation will probably destroy the insects; but the black matter should be washed off by tepid water applied by a sponge.

REPORT ON CUCUMBERS (*J. Northwood*).—In consequence of the cold, ungenial summer the trial of Cucumbers at Chiswick proved a failure, and the Committee thought that under such circumstances correct observations could not be made.

COTTAGERS' KALE—STANDARD ROSES (*S. S.*—*Belper*).—We only had the Cottagers' Kale one season, and shall never have it again. What you want for your cold exposed situation are standards of the very strongest Hybrid Perpetuals, such as *Baronne Prevost*, *Madame Laffay*, *Duchess of Sutherland*, *Général Jacqueminot*, *General Simpson*, *Lord Raglan*, *Jules*

Margottin, *Evêque de Nîmes*, *Auguste Mie*, *Madame Masson*, *Mathurin Regnier*, and *Robin Hood*.

WEEVIL IN WHEAT (*J. C. H.*).—When two questions are included in one letter, each having to be submitted to a different authority for an answer, one of them often is overlooked. The Wheat Weevil (*Curculio granaria*) may be destroyed by subjecting the Wheat to a temperature not less than 135°, nor more than 140°. We know of rooms heated by hot-water pipes for the purpose of thus freeing grain from that insect pest. After being so heated the grains unattacked by the Weevil are uninjured either for the baker or for sowing. After clearing out the Wheat we would fumigate the granary with burning sulphur, as recommended to-day for destroying red spider. Then good ventilation and frequently turning the Wheat ought to keep away the Weevil.

OPIUM GROWING IN ENGLAND (*J. K.*).—The large white Poppy (*Papaver somniferum*) is grown largely in Essex and Kent for the production of its capsules, or heads, used for medical fomentations. It has been tried to obtain opium from these heads, but with no success as a profitable pursuit. The opium is neither produced so abundantly nor is it so narcotic as in tropical climates. The wetness of our seasons is also against its successful collection. In the "Quarterly Journal of Science," published some twenty-five ago, edited by Mr. Brande, there are full directions for wounding the capsules, and collecting and drying the drops of juice.

HEATING A GREENHOUSE BY A RETORT (*N. Crawford*).—We wish you had given us a rough plan of the relative positions, and described the sort of retort you proposed using. You would see how Mr. Fish proposed heating from a kitchen fire in a late number, and Mr. Allen will give an account how to heat such a place by a fire. We have doubts if you will manage such a large house from the back of your parlour fire without considerable trouble, and, perhaps, such an *emeute* as Mr. Allen refers to. Certainly, if practicable, we would prefer a small flue, or a small boiler, or even a moveable stove inside, as frequently recommended, and of which more details appear to-day. There is no particular attraction in your plate-glass for cold, but the more glass there is in the house, the colder will it be in winter, and the warmer in summer. If we do not meet your case write again, and give more particulars.

EARLY PEAS (*A Young Gardener*).—You may grow Peas in pots in a cold greenhouse to turn out into the open ground in early spring; or you may sow a row inside near the glass of an orchard-house to remain; or you may cut strips of turf three inches wide, turn them roots upwards, cut out a gutter along their centre, sow the Peas in it, cover with a little compost, keep in a cool greenhouse or orchard-house until early spring, and then plant out in the open ground the slips of turf in rows where the crop is to be grown. The latter is the method we adopt. Those grown in a row in an orchard-house come into production about ten days before the others. We always sow during the first fortnight of January.

FRUIT TREES FOR NORTH BORDER—CURATE'S VINERY (*H. A.*).—You do not say what kind of fruit you want, whether Apples, Pears, Plums, or Cherries, or part of each. Neither do you say whether you live at Land's End or John o'Groat's, or only midway between. For APPLES you may choose Early Harvest, Kerry Pippin, Ribston Pippin, Cockle Pippin, and Nonpareil. PEAR—Jargonelle, Louise Bonne of Jersey, Seckle, Baronne de Mello, Marie Louise, Joséphine de Malines, and Beurré de Rance. PLUMS—July Green Gage, De Montfort, Jefferson's, Kirke's, Reine Claude de Bayay. CHERRIES—May Duke, Elton, Belle d'Orleans, and Bigarreau. The Vines in the "Curate's Vinery" are not to be trained leaning on the slates, but in mid-air between the ridge of the frame and the base of the furrow.

NAMES OF FRUIT (*G.*).—The Pear appears to be a small Duchesse d'Angoulême. It certainly is not Beurré d'Arenberg. The brown Apple is Pile's Russet, and the red one King of the Pippins.

TOMATOES ON A SOUTH BORDER (*A Reader*).—They will ripen there in rows very well. Buy our No. 482, in page 185 of which you will find a column of directions.

ETHER RESIDUUM FOR DESTROYING WEEDS ON GRAVEL WALKS.—In reply to your correspondent's query as to where the above can be obtained cheaply, I can only say that I procure it from a neighbouring chemical manufactory; and if he resides near any of the large towns he may easily discover the address of a manufacturer of ether from the retail chemists. I pay one halfpenny per lb. It is a thick liquid weighing somewhat heavily. The difficulty is that the price is too low to make it worth the while for the chemist to make it an article of general sale; and if it were dearer it would be too expensive for general use, as it requires a considerable quantity to do the work effectually.—THE COTTAGE GARDENER'S FRIEND.

HEAT FOR VERY SMALL GREENHOUSE (*An Amateur*).—To exclude frost from such a structure as a greenhouse 6½ feet long, no oil lamp or lamps would be sufficient, unless in such number as to contaminate the air. You had better rely more upon covering the whole with frigid domo, and putting a four-gallon stone bottle of boiling water inside during severe weather.

KEEPING HARES FROM BARKING FRUIT TREES (*Dibindale*).—Nothing is so effectual as smearing the stems, as high as a hare can reach, with a strong mixture of night soil and a little clay made into a paste, with drainage from the stable or cowhouse.

CALYSTEGIA (*G. M. B.*).—Pray exchange pieces of the roots of your single-flowered sport with Mr. Beaton for his simplex, to see if there be any difference, and say what is the aspect and height of the wall and how you manage to train. *Verbena teucrioides* is of all others the sort we want most, because it is the sweetest of them all, and because, also, that is the right strain to cross with *Verbena venosa*, they being the only two good garden sorts from the wilds of nature with upright spikes of flowers. A parcel sent to Mr. D. Beaton, Surbiton, Surrey, will reach him.

GERANIUM GAUNTLET SHEDDING ITS LOWER LEAVES (*Gauntlet*).—That is just the way of Gauntlet, and no kind of treatment will ever alter its nature in that respect. If Gauntlet were not gawky as much as a beauty, ten thousand plants of it in pots would be sold in Covent Garden alone every winter. Fulmer's Early Forcing and Newington Wonder have been the two most favoured sorts of dwarf Beans for forcing in private families for some years past.

NAMES OF APPLES (*X. F. Z.*).—38, Ord's Apple; 2, Nonpareil; 57, Waltham Abbey Seedling; 7, Winter Greening; 42 and 45, unknown.

POULTRY AND BEE-KEEPER'S CHRONICLE.

POULTRY SHOWS.

DECEMBER 3rd, 4th, 5th, and 6th. BIRMINGHAM. *Sec.*, Mr. John B. Lythall, Offices, Unity Buildings, Temple Street, Birmingham. Entries close November 1.

DECEMBER 6th. HULL AND EAST RIDING. *Sec.*, G. Robson, 25, Waterwork Street. Entries close November 22nd.

DECEMBER 12th, 13th, and 14th. NORTHERN COUNTIES (DARLINGTON). *Sec.*, J. Hodgson, Darlington. Entries close Nov. 19th.

DECEMBER 12th, 13th, 14th, and 15th. CRYSTAL PALACE. (Poultry, Pigeons, Rabbits, Ornamental Water Fowl, and Pheasants). *Sec.*, Mr. W. Houghton. Entries close November 10.

DECEMBER 18th and 19th. LORD TREDEGAR'S, at Newport, Monmouthshire. *Sec.*, Mr. C. H. Oliver, Commercial Street, Newport. Entries close Nov. 21st.

DECEMBER 21st and 22nd. HALIFAX PIGEON SHOW. *Sec.*, D. R. Edgar. Entries close December 8th.

DECEMBER 27th, 28th and 29th. KENDAL. *Hon. Secs.*, G. C. Whitwell and T. Wilson. Entries close December 12th.

JANUARY 30th and 31st. ULVERSTON. *Secs.*, Mr. T. Robinson and Mr. J. Kitchen. Entries close January 10th.

FEBRUARY 6th and 7th. LIVERPOOL. (Poultry and Pigeons). *Sec.*, Mr. A. Edmondson, 4, Dale Street.

JUNE 4th, 5th, 6th, and 7th. BATH AND WEST OF ENGLAND.

CHESTERFIELD POULTRY SHOW.

YOUR correspondent, in his letter "On the Management of Poultry Shows," makes several remarks on the Chesterfield Show; which, as it is the only one in our county, I do not like to see treated so very cavalierly, especially as what he states is quite at variance with what passed before my own eyes.

If your correspondent, in saying it is a rural Show, intends conveying the idea that it has many country visitors, he could not well pay it a greater compliment; but if he means being purely local exhibitors, let him examine the prize list or catalogue. He will then find that out of a Show of more than four hundred pens only one hundred were from the immediate neighbourhood.

The notice that no person would be allowed to touch any fowls being a mere oratorical flourish could not have been as he states; for during the whole time the Show was open there was always present one or both of the Secretaries and several of the Committee, assisted by three policemen, to enforce that rule—in fact, I caused four or five persons to be expelled for breaking the rule, which is in itself enough to prove that it was no "oratorical flourish." Of the good points of the Show he sings small. He forgets to say that the whole of the four hundred pens were despatched and everything cleared away by ten o'clock the morning after the Show; and last, but not least, that the whole of the prize money was paid within a week of the Show—a fact which it would be well if many larger Shows would bear in mind.

I must plead a love of fair play for thus troubling you. I enclose my card and remain—A DERBYSHIRE POULTRY FANCIER AND ONE OF THE COMMITTEE OF THE CHESTERFIELD SHOW.

P.S.—The Show is, I believe, postponed from January to May next year.

PROFIT FROM RABBITS.

IN reply to a letter from a correspondent signing himself "A RABBIT-KEEPER," in which he states he is quite puzzled to understand how a profit of £600 was made by breeding 2400 Chinchillas and Himalayas. He does not understand, because he is evidently quite ignorant of their value. If he refers to the Editors' reply to "JEMIMA WILHELMINA," he will find that they do not state 1s. each is the average price for Chinchillas. As in No. 627, they inform the same correspondent that 20s. to 26s. per couple is the price, and that is a very moderate price. I doubt if full-grown pure-bred specimens could be obtained under 40s. per couple. At the time I had my warren, I made 50s. per couple of large quantities. One furrier in London had a hundred full-grown Rabbits, and paid near £100 for them; and even the Rabbits I sent abroad realised more than the price he mentions.—R. S. S.

RICE AS POULTRY FOOD.

IN your answer to a question respecting blind chickens you say feeding on rice is not the cause, but that "rice is an abomination in poultry feeding, and that it breeds vermin we know."

Now, all this summer I have fed my poultry at least twice a-week upon rice boiled and unboiled—that is, alternately with barley and Indian corn, and finer fowls for the table I never had, and they are certainly quite free from vermin. Perhaps you will

kindly inform me from what cause you know rice to be injurious to poultry. I believe a low condition in fowls will be sure to bring vermin, but I am yet to be convinced that rice is the cause, and believe it to be an old and strong prejudice; for we are at great disadvantage here with our poultry—our soil being heavy clay, and neither sand, gravel, nor chalk to be found in it.—A. W., Sydenham.

[Your note contains its own answer. Barley and Indian corn alone would be too fattening for your poultry, and the alternation of rice acts as a corrective; for there is no more reducing diet than rice—it is pure starch and incapable of producing fat in any animal. Fowls kept upon it become thin and low in condition, and then vermin always occur. Since we wrote the answer to which you allude we have remembered a voyage from India, unusually protracted, when the fowls on board were supplied with nothing but rice. They became mere bags of bones, and almost all became blind in one or both eyes.]

STINGLESS BEES.

YOUR last publication alludes to the desirableness of introducing into this country the stingless bees of Guatemala. Now, I have been informed that some years ago this was done at Knowsley by the late Lord Derby—I suspect with no satisfactory result. You remark, "Even if they are not such good honey-harvesters, yet their unarmed condition would more than compensate for that." This position I take leave to doubt, and quite endorse the opinion of Dr. Bevan, "that the fruits of their labours must very soon become a prey to the wasps and bees of the country. The stingless bees, having no weapon of defence to enable them to cope with armed assailants, would soon be exterminated. In their native clime, where sweets abound, no temptations to predatory attack may occur."—H. T.

OUR LETTER BOX.

GROUND OATS OR BARLEY (H. T. J.).—As we do not know where you live it is impossible for us to say where you can purchase these. But you might have them crushed or ground at any corn-mill; or any corn-dealer would get them for you; or you might buy a small hand-mill and crush them at home.

BANTAM'S LEGS USELESS (J. Carr).—The probability is, that the spine has been injured during the railway conveyance. In that case time only can restore the nervous influence over the legs. But the cause may be pressure on the brain from the rupture of a small blood vessel, in which case, quiet, and soft low diet, such as boiled potatoes and fine bran or pollard scalded, and plenty of green food, will give the best chance of recovery. In either case it must be a work of time.

RABBIT-KEEPING (One that always lost by Rabbits).—A garden with "a very hard soil" is not well adapted for Rabbits burrowing in it, but if you were to throw the soil up into banks in various parts it would probably answer. Tame Rabbits will breed in such a place. Turn them down at any time of the year. You will see what "R. S. S." says to-day about Himalayas. You had better advertise for what you require.

HIMALAYAN RABBITS (Lapinus).—The Himalayan Rabbits are small, hardy, and good breeders. They have white bodies, red eyes, short black ears, and black noses, tails, and feet. The Patagonian Rabbits are not as hardy as the commoner sorts, nor are they as prolific. The Himalayan are easily to be procured at prices varying from 7s. 6d. to 12s. each. The Patagonians are rare and but little known, and if pure bred fetch long prices.

LOSS OF A LONG TAIL-FEATHER (B.).—This in a Game cockerel is a disadvantage, but by no means a disqualification. Accidents are never made fatal to success if it can be avoided; but if they constantly happened to those parts of the plumage where defective colour would at once insure defeat, they would be looked upon with suspicion. At present such is not the case.

COSTIVENESS IN A CANARY—BREEDING AND CROSS-BREEDING (A Nottingham Reader).—For costiveness, a little sopped bread sweetened with moist sugar, or a little treacle in their water may be found beneficial. To effect a permanent cure, the cause should be removed when discovered. Rapeseed I do not consider good for cage birds. Two hens may be put to one cock if the cage is large enough. The hen should be first acquainted. Four hens may be put to one cock if turned in a room or aviary. The Goldfinch breeds freely with the Canary. The hybrid produce are called Goldfinch Mules, and are good singers. Their general colour is a mixture between that of a Goldfinch and Grey Canary. Occasionally they are pied, when they are more esteemed. I consider Canary-seed the best food for Goldfinches, with an occasional addition of groundsel, plantain, dandelion or thistle heads.—B. P. BRENT.

LONDON MARKETS.—NOVEMBER 26.

POULTRY.

There is that lull in the trade which generally precedes Christmas, and as the supply is good, prices are hardly maintained.

| | Each—s. d. | s. d. | | Each—s. d. | s. d. |
|--------------------|------------|--------|-----|-----------------|------------|
| Large Fowls..... | 4 | 0 to 4 | 6 | Pheasants..... | 3 0 to 3 6 |
| Smaller Fowls..... | 3 | 6 | 4 0 | Partridges..... | 2 0 „ 2 3 |
| Chickens..... | 2 | 6 „ 2 | 9 | Grouse..... | 2 0 „ 2 3 |
| Geese..... | 6 | 0 „ 6 | 6 | Pigeons..... | 0 8 „ 0 9 |
| Ducks..... | 2 | 6 „ 3 | 0 | Hares..... | 3 0 „ 3 6 |
| Ducklings..... | 0 | 0 „ 0 | 0 | Rabbits..... | 1 4 „ 1 5 |
| Turkeys..... | 7 | 6 „ 9 | 0 | Wild ditto..... | 0 8 „ 0 9 |

WEEKLY CALENDAR.

| Day of M'nth | Day of Week. | DEC. 4-10, 1860. | WEATHER NEAR LONDON IN 1859. | | | | Sun Rises. | | Sun Sets. | | Moon Rises and Sets | | Moon's Age. | Clock after Sun | | Day of Year. |
|--------------|--------------|-----------------------------|------------------------------|-----------|-------|-----------------|------------|---------|-----------|-------|---------------------|-------|-------------|-----------------|--|--------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | | | | | |
| 4 | Tu | Laughing goose comes. | 29.900-29.495 | deg. deg. | S. | ·26 | m. h. | m. h. | m. h. | m. h. | 21 | m. s. | | | | 339 |
| 5 | W | Black-throated diver comes. | 29.560-29.393 | 54-30 | W. | ·12 | 51 af 7 | 51 af 3 | 42 10 | morn. | 21 | 9 24 | | | | 340 |
| 6 | Th | December moth appears. | 29.669-29.555 | 56-32 | W. | ·12 | 52 7 | 50 3 | 5 0 | 23 | 8 33 | | | | | 341 |
| 7 | F | Polyanthus flowers again. | 30.053-29.659 | 41-29 | S. | ·26 | 53 7 | 50 3 | 5 0 | 23 | 8 33 | | | | | 341 |
| 8 | S | Skylarks flock. | 30.282-30.154 | 49-32 | S.W. | — | 54 7 | 50 3 | 28 1 | 24 | 8 7 | | | | | 342 |
| 9 | SUN | 2 SUNDAY IN ADVENT. | 30.520-30.439 | 50-29 | E. | — | 55 7 | 49 3 | 53 2 | 25 | 7 41 | | | | | 343 |
| 10 | M | Wild swan comes. | 30.658-30.594 | 43-27 | E. | — | 56 7 | 49 3 | 18 4 | 26 | 7 14 | | | | | 344 |
| | | | | 44-24 | E. | — | 58 7 | 49 3 | 44 5 | 27 | 6 46 | | | | | 345 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 46.7° and 34.8° respectively. The greatest heat, 60°, occurred on the 7th, in 1856; and the lowest cold, 14°, on the 6th, in 1844. During the period 117 days were fine, and on 114 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

Should frost set in every advantage to be taken of it to wheel manures and composts on to the various quarters requiring them, and if they cannot be trenched in at once let them be laid in heaps at convenient distances, and covered with soil. Ridged ground to be also forked over, to expose fresh surfaces to the action of the frost. *Asparagus*, if the soil in the frames in which the roots are planted should become dry, it will be necessary to water it with water of the temperature of the bed; but this is not often required if the bed heats moderately, and the roots have been properly watered when planted. There should be at least five or six inches of soil of an open texture, such as leaf mould, &c., above the crowns of the roots after they begin to shoot. Air to be admitted at every favourable opportunity to the productive beds. *Beans* (*Broad*), where they have been planted in rows, and have made their appearance above ground, draw the earth in ridges on each side of them, so as to afford some little protection from cold cutting winds. *Cauliflowers*, watch narrowly for slugs among the young plants, and keep them free from dead leaves. If any are planted in pots for the purpose of protecting them during severe weather they must be carefully attended to with water, or in the spring it will be found that time and labour had been uselessly employed. *Herbs*, any that may be wanted in a green state to be taken up with balls of earth about their roots, potted, and placed in a forcing-house. *Lettuce*, the plants in frames to have all the air that can be given them in mild weather. Keep them, and also any that may be in the borders, free from dead leaves and litter of all sorts that is likely to harbour slugs. *Peas* to be treated as advised for Broad Beans.

FRUIT GARDEN.

The ground among fruit bushes to be dug very lightly, especially near Raspberries which have their roots close to the surface; and it is better in all cases to dispense with digging when it cannot be done without injuring the roots. Prune Filbert trees and standard Pear and Apple trees; and when the latter have made an over-luxuriant growth dig a trench two feet from the stem all round, and cut some of the strongest roots, especially the "tap," or roots that descend perpendicularly, this will induce a fruit-bearing state. The distance from the stem must be more or less according to the age and size of the tree, the larger the tree the further it will be necessary to keep from the stem in making the trench. Fruit trees infested with scale to have the bark well scraped and painted with a mixture of soft soap, cowdung, and lime, taking care to well work the composition into the crevices of the bark.

FLOWER GARDEN.

The smaller-growing shrubs—as some kinds of *Cytisus*, *Spiræas*, and *Deutzias*—require to be pruned annually to produce a good show of flowers, and to form well-shaped bushes. All the deciduous shrubs may now be

pruned whenever there is time, except during severe frost. *Auriculas* and *Polyanthuses* in frames will require but very little water. Remove dead leaves. Look over the *Carnations* and *Picotees* in pots, and if any of the lower leaves are withered or mildewed cut them off with a small pair of sharp-pointed scissors; and if any dust be lodged in the axils of the leaves it must also be carefully cleaned away. Where *Rabbits* are likely to attack *Pinks* give a top dressing of soot as a preventive. Now when all the leaves are down clear them up, and put the borders, &c., into neat order for the winter; also sweep and roll the walks frequently, to make the place as enjoyable as possible at this season. Continue planting trees, shrubs, *Roses*, and *Rose-stocks* for future budding. Prune and nail, or tie in, all creepers on walls, trellises, pillars, &c.

STOVE.

Many plants will be sinking into repose here, and from such withhold water: of these may be named the *Achimenes*, the *Clerodendrons*, *Erythrinæ*, the *Gloxinias*, &c., with various bulbs; they will require to be forthwith placed on a shelf by themselves, and as the *Gloxinias* and *Clerodendrons* are liable to suffer from a low temperature it is advisable even when at rest not to expose them to a temperature below 50°.

GREENHOUSE AND CONSERVATORY.

The importance of maintaining a circulation of air in these houses must plead an excuse for so frequently recommending it; a moist, stagnant air is now more injurious to them than a cold, dry atmosphere. *Camellias*, as they come into bloom, to be placed in the lightest and driest part of the house, as the blooms soon become spotted and decay where the air is damp. *Pelargoniums* to have their shoots thinned, to produce stocky plants, and to be neatly tied out to sticks. A careful look out to be kept that plants may not suffer from drip. *Mignonette* and *Neopolitan Violets* will require an abundance of light and air to keep them from damping off. W. KEANE.

FRAMPTON PARK NURSERY, HACKNEY.

MR. WILLIAM HOLMES.

THE late Dr. Frampton, of King's College, London, had an estate of fourteen acres out in the suburbs, adjoining the nursery of the Messrs. Loddiges, at Hackney. His country house and gardens were there, and Mr. Holmes was his gardener; but London pushed out too closely upon the doctor's privacy at last, and he had to shift his quarters to the west end, and let his Frampton Park for building ground, and Mr. Holmes took the first slice of the pudding from the side on which the Plums lay thickest—from the kitchen garden; and some of Dr. Frampton's forcing-houses are still at the old trade and doing well in the hands of the doctor's right-hand-man, Mr. Holmes.

After the first fall of the Horticultural Society, in 1830, the zeal and zest for Chrysanthemums went down with them about London, and kept about the lowest degrees on the scale for the space of ten or twelve years; and we

owe the present revival of them to Mr. Holmes, who was the first mover of the Stoke Newington Chrysanthemum Society—the first of its kind in the three kingdoms, and who with Mr. Arthur Wortley laid the foundation of it twenty years since. And in five years after the foundation stone was laid the Society held its first exhibition, and a host of really good, practical gardeners competed with the said founders for some years, to their mutual advantage and to the final triumph and success of the Chrysanthemum on British soil, and more particularly as a city and suburban plant of the highest interest and value, as is now attested by the endless repetitions all round London of the spirit which first moved the Messrs. Holmes and Wortley.

The stud-book records the rise and progress of the fancy to the present day; but it would not be safe, or just, or generous to attempt to draw up a digest of what has been done to this period, without first consulting those who must best know the causes of success. Mr. Bird, although he did not enter the lists as a competitor till within the last few years, was from the first a warm supporter of the movement, and he rolled the ball on its yearly round by some valuable prize to be competed for. I volunteered to see the wise men of the east on these grounds alone; but having seen the deference which was paid to the practical value of Mr. Holmes' opinions this season in the Floral Committee, of which he is an honorary member, like the rest of us, I made a double point of seeing him in his own castle before a final judgment should be made on our present progress in Chrysanthemums.

We have seen, and we have long known, that Mr. Salter grows all his Chrysanthemums on the natural system, out of pots in the open borders, without stopping or training, and that he removes his best kinds and all the newest sorts with balls early in October into his winter garden under glass, giving them as much free air almost as they had out of doors. Mr. Bird's system is widely different. He grows all his plants in pots, but he neither cares nor looks for shape, or size, or symmetry in his plants—all his strength is reserved for the blossoms alone, which he sells as fast as they are ready at so much a dozen, a score, or a hundred. Mr. Holmes, on the other hand, having been brought up a gentleman's gardener, has a constant eye to the conservatory, the drawing-rooms, the corridors, vestibules, and front halls of public and private mansions; and his growth of Chrysanthemums is exactly on the Chinese model, and that model or perfection of specimen-growing has not yet been attained in England by some of her best practical sons, as was well exemplified at the last competition in their growth at the Crystal Palace, and as Mr. Fortune had told us of in his second book on China. If I could get to that point of charity which would admit that Mr. Fortune had made a slight error, or was deceived by the China gardeners in respect to their way of applying liquid manure to their Chrysanthemums, I could prove that there is not the breadth of a hair in the difference between the Chinese and the best English growers of Chrysanthemums, and at their head stood Mr. Holmes, as long as he chose to follow suit.

Mr. Fortune says—"The method of cultivating the Chrysanthemum in China is as follows:—Cuttings are struck every year from the young shoots (top of suckers), in the same manner as we do in England. When they are rooted they are potted off at once into the pots in which they are to grow and bloom—that is, they are grown upon what would be called by our gardeners the 'one-shift system.'" That is just the system which Mr. Holmes practised and recommends for all private gardens, amateurs, and objects; but for public show and competition with cut blooms, Mr. Bird's is the only sure way to success. "The plants are trained each with a single stem," Fortune goes on to say; "this is forced to send out numerous laterals near the base, and these are tied

down in a neat manner with strings of silk thread. By having the plants clothed with branches in this way, and by keeping the leaves in a green and healthy state, the specimens never have that bare and broom-headed appearance which they often present in England when they are taken into the greenhouse in winter." Mr. Holmes says there is neither force nor art necessary in England to induce single-stemmed plants of Chrysanthemums, on the one-shift system, "to send out numerous laterals near the base." Nothing of the sort. The one-shift system gives them the same amount of freedom as they would receive at that age and stage of stunted growth, if planted in the open ground; and the effect of that planting on a stunted growth of so many inches is to let go or start all the eyes at once, and almost on equal terms with the leading bud; but should a very free kind run up from the terminal bud before the laterals got a fair start, it is easily brought to the balance by merely bending it for a time till the laterals are as forward as itself. Mr. Holmes wrote, read, and lectured on Chrysanthemums, for the good of the fancy, for the last twenty years with great success, and his very last words in his last year's catalogue, in which he gives a digest of their culture, are these:—"In growing specimen plants for exhibition (or for private use), it is of the utmost importance to make a judicious selection of suitable varieties; for, as a general rule, the varieties producing the finest blooms to exhibit in a cut state are the very worst for growing as specimen plants:" and farther on he says, "I am decidedly in favour of shifting plants for specimens from the 60 or 48-sized pots at once into the 11-inch pots—they invariably break stronger and more free." The italics are mine to lay most stress on the key notes. The soil they use in China is of the richest description in the world—the bottom of pools, ponds, and the bottom of their own filthy tanks or cesspools, mixed up and dried, and pulverised in the sun and air, and they use liquid manure the whole summer; but in our colder and much damper climate nothing is farther from the practice of our best Chrysanthemum growers than all this richness. Mr. Holmes says the best compost is "two-thirds loam, one-third leaf mould, or manure from an old hotbed," with good drainage, and "use liquid manure at all times sparingly," and never till the bloom-buds are well forward. Mr. Bird told me that some believed his success was owing to a running stream of sewage at the bottom of the nursery, and he did use it for his Geraniums one year all through the spring growth, and never saw such leaves and shoots; but, like Aunt Harriett, he found to his cost that that was not the way to have a bloom worth looking at, and he never allows one drop of liquid manure to any one of his Chrysanthemums before the end of August. His very words were, "Keep them cool, like Christians, in hot weather; but when it gets cold in the autumn, and they have a load to bear, a little warm liquor will do them as much good as to you or me." His compost is two-thirds forest loam—that is, yellow, strong, friable loam, and "a little rough rotten dung, or old leaf mould." For his largest flowers he has adopted a safe method for strengthening his plants just at the proper period. He puts a lot of spent Hops on the top of the pots for the stems of the plants to root into, and to encourage the rise of new roots from the old ones in the ball.

Spent Hops, at 5s. a large cartload in London, are the next best thing for holding moisture, and for young roots to spread in after the Cocoa-nut refuse, and the next best substitute for recovering old Orange trees or any half-dead woody plants. Mr. Holmes' catalogue has five pages of the most useful instructions for growing Chrysanthemums for all purposes. His collection of them is as select as his knowledge of them and of his principal customers would indicate.

His own selection of kinds for making specimen plants of is the following:—Annie Salter, Christine, Dr. Maclean, General Negrier, Queen of England, Plutus, Insigne,

Defiance, Camerson, Mount Etna, Pilot, Auguste Mié, Vesta, and Progne. The six following he thinks a child might manage to bring out to exhibit in cut blooms as true to shape as the best dressed flower, as the only difficulty is to hit on a way of keeping them from coming naturally, and in the easiest manner up to the standard shape:—Dupont de l'Eure, Plutus, Nonpareil, Vesta, Queen of England, and Themis; and the next are the half-dozen which are most difficult to manage in the whole family:—Pio Nono, Two-coloured Incurved, Madame André, Campestroni, Miss Kate, and Raymond. The next is a selection of twenty-four kinds of the best Pompones, or "as the very best" for growing as specimens:—Aurora Borealis, Bob, Drin Drin, Duruflet, Mrs. Dix, Andromeda, Donna Alba Gonzales, Cedo Nulli, Général Canrobert, Asmodie, Helen, La Vogue, L'Escarboucle, Sainte Thais, Trophée, Mustapha, La Gitana, Miss Julia, Miss Talfourd, Madame Fould, Mr. Astie, Polycarp, Nelly, and Francis I.

He has the same abhorrence to the table-top-shaped or squat training as myself, and he fully and freely agrees with me that no mode of training Pompones is one-half so telling as the pyramid.

The following are the cream of all the new large Chrysanthemums which he and the other large growers had sent out last spring for the first time, and here it will be seen how closely he has hit on Mr. Salter's and on Mr. Bird's choice, already entered in this stud-book:—Alarm (Clark), dark violet crimson; Arthur Wortley (Salter); Bouquet des Flore (Clark), dark red crimson; General Hardinge (Clark), Indian red with orange shade; Mrs. William Holborn (Salter), ivory white; Novelty (Clark), blush white; Negro Boy (Clark), very dark crimson; Pictoreum Roseum (Clark), red salmon; Saccoa Nova (Saco vera), lilac; Queen of the Isles (Salter), a great improvement on Vesta, and pure white; Yellow Perfection (Clark), a model flower, a great improvement on Plutus, and a golden yellow, not so early as most of the above.

The following are the very best score out of the whole tribe of older kinds; for Mr. Holmes and I went through the whole collection for that score, but he could do it in his arm-chair just as well:—Beauté du Nord, Cassandra, Chevalier Dumage, Dr. Maclean, Defiance, Delight, or Webb's Delight, explained from Mr. Bird's, Dupont de l'Eure, Glory, Julie Lagravère the best crimson, Mount Vesuvius, Madame Lebois, Nonpareil, Prince Albert, Pio Nono, Plutus, Pilot, Queen of England, Themis, Vulcan, and Vesta.

Now, you have three selections from the stocks, and from the experience of three of the best judges and three of the best practitioners in England in the three different and distinct modes of managing the Chrysanthemum, together with the best wishes of your instructor, if, indeed, you are not already above his mark; and if you are you will the more readily join your best wishes for the spread of this branch of the truth among the natives.

But what about the mystery of dressing Chrysanthemums? I told you lately how completely I was deceived on that point after Mr. Bird let me into all his secrets; and now hear what Mr. Salter and Mr. Holmes tell us all in their respective catalogues on that head. Mr. Salter says incurved flowers only attain the model of perfection, and such as are seen at London shows from four to six inches in diameter. "To obtain this size peculiar treatment is adopted, the whole vigour of the plant being concentrated in four or five blooms, and all loose or misshapen petals (florets) carefully arranged or removed"—that is, if the four or five blooms do not come up naturally to the model, the dresser must bring them up by his cunning craft. "It would be folly," says Mr. Salter, "to disguise this fact, which is only noticed to prevent disappointment to those who may be led to suppose that flowers of these dimensions are the result of ordinary culture."

In his catalogue Mr. Holmes says—"That unfair dressing does exist there can be no doubt, and the same remark applies to every florist's flower, but 'tis the exception, not the rule; but those who maintain that the fine blooms of the present day are the result of dressing are in error. That the flower may be improved by dressing there cannot be a doubt. It is quite fair, I think, to improve the general appearance of a flower, but it is unfair and dishonest to disguise it. No amount of dressing will make a bad flower a good one, and I am quite of opinion the finest blooms are produced without any dressing at all." And I am the first convert to that opinion through the evidence of my senses.

Of dressing flowers Mr. Bird says, "A fool and his money are soon parted; the practice will not pay, but it is better to spend money that way than in drink." His success in taking the first prizes with cut flowers shows that the Chinese and English way of saving luxuriant foliage down to the edge of the pot, according to our scientific notion of the value of good leaves well exposed, is not in the smallest degree necessary, nor does it add to the size, or shape, or beauty of any one kind of Chrysanthemum. His show-house rather represented a young forest very much in want of thinning, and without a leaf within two feet or a yard from the ground.

The nature of this path to success can only be explained one way, and it is this: The stems of the Chrysanthemum, the Pelargonium, Justicia, Clerodendron, and all other soft-wooded plants, which we treat on the herbaceous principle, so to speak, which we cut down yearly, or use for one season only, like as we do the stems of the Chrysanthemum itself—such stems need the use of luxuriant foliage no longer than is necessary to ripen that part of themselves; and though we maintain the leaves on the ripe stem with our highest art, it is to please the eye only. This doctrine will be hard to hear, yet it is in accordance with the law of Nature nevertheless, and you cannot gainsay it or explain the practice of the grower of model Chrysanthemum flowers on any other theory or solid basis. In short, there may be, and often is, in practice, the use and abuse of leaves. Just think that over in your mind, and mind that Mr. Bird can only afford to keep leaves on his Chrysanthemums as long as they contribute to the value of his flowers. Anything which will not pay in solid cash he leaves to young roosters and fancy-feathered folks, and so all the ripe shoots in his show-house are as free of leaves as this page; and there is neither a turn nor twist in his manner of training his plants, for he allows every plant to take its natural way till it shows the "first bud"—that is, the first flower-bud, and there he stops ninety-nine kinds out of every hundred for the first. The great majority of kinds he blooms "on the second bud" on the shoots which come after the first stopping, and some few kinds he "pushes on to the third bud." The latter must consequently be twice stopped, and the bloom come from the third start, so to speak, and which requires the following explanation:—In March he puts four suckers from the old stool into a 48-sized pot, and these are "the first to start" and make but one of his future plants. Every one of his pots has thus four plants in it. The first start is never stopped till the first flower-bud is seen. The first show or first flower-bud of all his exhibition plants he destroys, and I examined every one of them, and found that to be his universal practice. At every stop, or stopping, the Chrysanthemum divides into three branches. Then with four plants in a pot up to the end of July—say he has only four tops, stop the four at the first show, and three shoots from each give twelve shoots to one pot; and if you confine the flowers to one on a shoot there are twelve flowers for a pot—twice too many for some kinds; then the blooms are left only one on the strongest of each of half the shoots.

Well, six pots so managed, and a different kind in each pot, will bring him in his five guineas, or his silver

cup, if no other grower can make a better hit. He says no kind will ever take a first prize from a "first trial," or the first show for bloom on his system of growing the plants; because the enormous strength he gets into his shoots, and having so very few flowers to carry, the first show would have the flowers "in all manner of ways," and would be neither one thing nor the other. That truth I proved by direct experiment on eight of the largest kinds when the Russians first crossed the Pruth; but the Crimean war put a stop to my ambition to beat in Chrysanthemums—I only beat myself, and that most completely. My plants were in a rich border trained to a west wall, and kept to one stem the whole season, and to one or two flowers to each plant without ever stopping one of them, and of all the frights I ever saw that was the worst. Yet, strange to say, if you grow your plants to be seen in noble specimens of good gardening, the best plan is never to stop a shoot from first to last. That is Mr. Holmes' plan. He, too, takes no other than the best suckers from near the surface of the ball, one for a 60-pot; and as soon as the pot is quite full of roots, he shifts at once into the blooming-pots for his mode—the best mode for all private growers.

There are some kinds which must be once stopped, or rather the first flower-bud must be destroyed, and the next furnish the large blooms, and these two he has shown in his catalogue by figures 1 and 2, according as the kind suits best: that is the great step to know when one wants to take a prize. His own explanation of the process is this: "I have by figures 1 and 2 intimated which buds should be taken to insure fine, full, and perfect blooms. The varieties with the figure 1 prefixed indicate that the first bud should be taken. Those with figure 2 indicate that the second bud should be taken in preference to the first—for this reason, that the first bud of these varieties is generally too full of petal, and too coarse and confused for exhibitional purposes."

Those who mean to try their luck in the country for prizes should get hold of such good catalogues for a few penny stamps. Mr. Holmes has all his, the balls of the earliest Chrysanthemums, and the best of the new kinds, planted already out of pots, in wide pits which he can heat top and bottom, in order to make sure of a good crop of first-rate cuttings for next spring.

D. BEATON.

CULTURE OF THE GLADIOLUS.

I FIND a common prejudice amongst my friends that Gladioli are difficult to manage. I have grown them under very unfavourable circumstances for eight years in a shady and damp town garden, and am sure that any one who pleases may succeed as well.

The only sorts I should recommend to beginners are those sold as varieties of Gandavensis; and even they vary very much in their habit, and of some of them I can make nothing. I mention the following cheap kinds, on which the experiment of growing them may be tried; they may all be bought at prices varying from 4d. to 1s. 6d.:—Adonis, pale flesh; Aglae, salmon; Brenchleyensis, scarlet; Courante fulgens, scarlet; Ga'athée, blush; Impératrice, light blush; Mathilde de Landevoisin, nearly white; M. Vinchon, salmon. I have proved all these kinds by several years' growth, and select them for their vigorous habits. The situation cannot be too open, or the soil too light if good. Let the soil be well worked to a depth of two feet. If it is stiff Mr. Standish recommends burning half of it; but this is no very easy process if for a large border. If you can get river or pit sand, mix it with the soil in abundance. You cannot use too much leaf mould in growing them. Well-rotted cowdung is very good. Use these in what proportions you please, provided the soil is well drained, deep, light, and rich.

In my garden, where the soil is not stiff, but where the situation makes it damp, I dig a trench two feet in width and depth, and, taking away half the soil, replace it by pit sand and rotted rubbish heap in equal parts. I add as much leaf mould as I can afford, giving perhaps a peck to each clump of bulbs. I recommend the first week in April for planting. Cover the bulbs

three or four inches deep. The time of flowering varies from the beginning of August to the middle of October. If dry they should be well watered whilst in bud. I take them all up before the end of October, whether the leaves have begun to turn or not. The colder the bulbs are kept in winter, if dry and free from frost, the better. I should like to see this beautiful flower in more general request.

THE LATE SEASON AT ASHTON-UNDER-LYNE.

THE past season has been like what a navy said about the seasons at Woodhead—a place on the Manchester and Sheffield Railway. When asked how he liked that part of the country he replied, "Oh, beautiful! There is nine months winter and three months cold weather there." So we may say of the past year about here. Kidney Beans, few of us in this part had any except under cover, and Peas were a total failure—from eleven twelve-yard rows we did not get three pecks. Greens have done pretty fair; and at our place we had some pecks of Mushrooms from a heap of manure placed under a tiffany-shed.

In the flower garden Calceolarias, Saponarias, German Stocks and French Marigolds produced us the most flowers. We bedded out forty dozen of Verbenas, the same of Tom Thumb Geraniums, but had scarcely as many flowers the whole season. Apples that are exhibited generally from seventeen to twenty ounces each in weight were shown from seven to ten this year.

As you hinted some time since that you would like parties to send word what Greens stood best last winter in their different localities, I avail myself of the present opportunity. Curled Borecole and Brussels Sprouts weathered the storm here. Flowering Broccolis, Cabbage plants, and even Savoy died off early in the season. To make up for this sad loss various expedients had to be resorted to. I had a lot of Swedes and started them in an early vinery, forced as much Sea-kale as possible inside, grew Kidney Beans as early as possible inside. Mint, Thyme, Sage, and many other things perished.—J. HAGUE.

NOTES ON VERBENAS.

(Continued from page 105.)

LORD CANNING flourishes in a more congenial climate; but as his term expires next March, he would, if a good place was found for him, show us how he looked in his rosy lilac dress with a white eye. Madame Large did not think it any disgrace if she did blush very rosy, and her dark eye sparkled when she was surrounded by the *élite* of society. Variegated Defiance wished it to be distinctly understood that there was no gold permanently about him—it was only a farce to expect it, and those who did were greener than his leaves were. Madame Denis Blair did not think but that she might have a scarlet-shaded dress though it was poor; it would have looked brighter if there had been any sun. Monsieur Denis Blair thought it would quite kill him, and, indeed, he did look miserable. Sir J. Lawrence knew he was a public servant, but he had seen too many bright skies to put up with the Derbyshire summer of 1860. Venus was surprised that she should be placed in such company, and she would not let us admire her. She knew she was pretty and had a good eye, but she would not be laughed at when Ben Bolt was throwing his strong arms about and looking so rosy, and great Triumphant running all round her with his rich, violet, rose-shaded dress. Sir J. Outram retired for the season; his health was bad. Prima Donna once, and only once, smiled at her neighbour, Paul Pirini, showing himself off so well against Satanella, who could scarcely exist; while Souvenir de l'Exposition was placed as a remembrancer, and would do her duty, as much as to say, "I am very pretty, am I not?" And so she was. Matilda was only fit for select company—so very delicate she would die. She might do in a warm lady's place, but not here; and the Princess Clothilde laughed till she was a deep rosy scarlet—and well she might, to see poor Sir Joseph Paxton on her other side shivering with cold and trying to put on his rosy crimson coat, but could not. Verdi was even worse—he would not grow or bloom at all; while the Norfolk Beauty could only open her eyes partially, preferring the south side of a wall. Madame Lamoricière still held up her old striped banner. Mars (Sankey's) could not kindle his light, the clouds being too dark. Madame de la Vallière changed her dress from a French white ground to a dark lavender one splashed occasionally with white. Viscountess de Balleval was true to

character in grey. Manteau d'Evêque and La Deasse were in the third class, as equals. Madame Schmidt and Madame Matras were only equal fourths. Surpasse Appolon did not obtain a place; but Surprise ran very forward in August. Novelty could not attempt anything out of the common way, and, indeed, could only with difficulty be retained in its place. Zamba would enjoy the good things under the earth and did, I presume, if we might judge by looks. Isa Craig was engaged, we presume, with something good for next year, as no energy was exercised by her this year. Admiral Dundas refused to hoist his colours, although generally he is not very backward in showing them, and he will yet again stand some beating in the flower garden and tent, if not at sea. Ariosto went to sleep in as nice a bed as he could have, but would not wake up. We had calculated on having a treat of rich Mulberries, which he generally distributes very fine even in bed. Ajax, Abundance, and Comte de Morella started well for a race, and it was scarcely possible to tell which had the best of it for a time; but Abundance first gave in, then Ajax died on the road, and the Comte lingered as Colonel, now General, P. Thompson once remarked he heard an Irish dragoon say, as his horse lay dying, "Poor fellow! the baste is lingering fast to death." Eleanor looked on, and really showed such a dark rosy crimson face it was grievous that there was not something to make more of her companions either grieve or smile, that we might be able to see their true characters. Crimson King with his crimson bedder strutted about the ground, but both refused to dress. They were in *déshabille* the whole season. Old Cyclops once looked out of his eye as dark as he could look. We just caught sight once, only once, of the white of his eye. Conspicua was very poorly, and could not attend to business. Etoile de Venus and Etoile de Jardin were not prepared to do anything; and the Earl of Shaftesbury (Edmond's) looked quite fatigued—he had had so much to do with business and philanthropy that he was nearly worn out; but although he could not put on the fine rosy purple dress he used to wear with so much grace, and the white of his eye did not look so clear as usual, he purposed after a winter's rest to try another season, and hoped his efforts would be appreciated: but he did think it was too bad to have *another* Earl of Shaftesbury created of quite a distinct family in 1860, when he was in good health and spirits, and had no idea of being put on one side by a stripling coming out in spring when he was so much asked for—it was enough to make him fret and look dull. Felix Roland paired off for the season with General Simpson to the regret of his friends, and there was no splendour about Gloire de Monplaisir; there was too much dull weather, and the Impératrice Elizabeth declared she could not look so joyful and show her pretty looks as she had done when we were passing through such a critical period of the world's history. Lady Seymour said, "Pooh, pooh! Things will mend." And Brightonia joined with her and said, "Many of them were too finely bred. They should rough it like her and not grumble." Brillante de Vaise shouted "Hurrah! hurrah! I just heard a lady say I am not beaten yet, and I am first on the list." Hearing that shout a deputation waited on the writer consisting of Mrs. Pennington, with a full dress got up expressly for the occasion, of fine form, a deep red-rose colour (the only one she had this season), and Miss Emily Hanmer, with a ruby dress, and the white of her eye rather soiled. It had been splashed with wet and dirt. They were introduced by the Standard Bearer, looking a very dull blue. They stated that there were some among their company who were very vainglorious, because they had surpassed the generality of them. They knew they had faults, and who had not? But they did think some allowance should be made, and their defects not blazed all over the world. They were willing (all who were left alive of them) to submit to a trial next year with many of their opposite neighbours (new ones of 1860). Although they had new names, they questioned if many of them would not be discharged from the fine places they had, and many of the old ones be esteemed when the new comers were forgotten. They were further requested to say that as the old servants had been so severely dealt with, the seventy new ones would also be looked at and spoken plainly of in THE COTTAGE GARDENER.—*Pilsby Nursery, near Clay Cross.*

VINERY AND PEACH-HOUSE ADJOINING.

I AM dividing a house 42 feet long into a vinery and Peach-house. They are to be heated by hot water from a boiler at one end, with stop-valves at the partition—the object being to be able

to heat the compartment next the boiler at times without heating the other. Would you make the Peach-house or vinery in the end next the boiler? And why?—AN OLD SUBSCRIBER.

[The arrangement and the why will depend much on circumstances as to which house you wished to force earliest, if you forced much at all. We presume, like many of us, your houses will be used for many odds and ends, besides Vines and Peaches; and therefore, knowing nothing of your particular intentions, we would, unhesitatingly, advise having the boiler at the vinery end, and for these reasons: First, the Vines will require more heat than the Peaches, and they will get that even if you did not take your flue through the end or part of it, and thus throw into the house what might otherwise go up the chimney. Secondly, if your Grapes are kept hanging long, especially in the autumn, and the weather is dull, dry heat will be required to keep them from moulding and damping, when the Peach trees might be the better for all the exposure they could get, would require nothing after the fruit was all gathered, if the wood was ripening freely, but plenty of air. Thirdly, supposing that you filled your vinery in winter with bedding plants, or even fine Geraniums, &c., in pots, you could keep up an average night temperature of from 40° to 45°, without any danger of starting your Vines prematurely—that is, sooner than you wished to do; but the same amount kept up in a Peach-house with fire heat for any length of time, would be apt to swell and start your Peach-buds. If both houses are to have plants in winter, the hardest should go into the Peach-house, and the temperature there by fire heat should range from 35° to 40°. Sun heat has no such exciting effect, and, provided plenty of air is given, 10° or 15° rise from that will do no harm. These reasons may suffice for the present, as we do not know your particular intentions. By keeping these in mind, every house we have is full in winter, and we do not think that Vines or other things suffer in consequence.]

DRYING RHUBARB.

RHUBARB dries very well, and when well prepared will keep good for an indefinite period. The stalks should be broken off while they are crisp and tender, and cut into pieces about an inch in length. These pieces should then be strung on a thin twine and hung up to dry. Rhubarb shrinks very much in drying—more so than any plant I am acquainted with, and strongly resembling pieces of soft wood. When wanted for use, it should be soaked in water overnight, and the next day simmered over a slow fire. None of its properties appear to be lost in drying, and it is equally as good in winter as any dried fruit. Very few varieties of Rhubarb are suitable for drying, as most of them contain too much woody fibre. The best variety of Rhubarb for any purpose is the Victoria, when grown in a suitable situation. The Mammoth is worthless, owing to its fibrous nature, as are also some other kinds.—(*Prairie Farmer*)

A DWARF APPLE ORCHARD.

I HAVE just been watching my gardener and his man at their biennial November job—taking up and replanting my dwarf Apple trees, of which I planted a square piece of ground in my kitchen garden six years ago. The soil is heavy and dark in appearance, and about eighteen inches deep, resting on what my gardener calls a "nasty clay," (it is calcareous), which gives a yellow tint to the leaves of Apple trees if they are allowed to root into it. For this reason he prognosticated a complete failure in my plantation, not knowing that I intended to keep the trees in health by giving him a biennial job.

As this method of cultivating Apples seems eminently connected with cottage gardening, and per consequence with THE COTTAGE GARDENER, I will endeavour to describe my mode of planting. I selected a square piece of ground that would hold about fifty trees, and marked it out in rows four feet apart row from row, and three feet apart in the rows. The Apple trees, bushes on the Paradise stock, were planted at these distances apart in January; some of them bore fruit the first year, and the second year I had a nice crop. Then came November—the time for removal or lifting the trees, and I must confess I felt somewhat loath to disturb their well-doing; "the nasty clay" underneath, however, came timely to my mind, and I at once determined to persevere and to do as I had been told. My gardener, therefore, under my directions commenced operations

by digging a trench a spade deep (or a "spit deep," as he says), in three-fourths of a circle one foot from the stem of the tree, leaving the remainder of the circle solid ground. He then placed his spade in this solid ground in a sloping direction, so as to go under the roots of the tree, gave one heave, and the tree was up, with a nice ball of earth full of fibrous roots. It was then placed on the ground for a minute or two, three or four straggling roots shortened with a knife, some of the surface mould shovelled into the hole and trodden firmly down, and the tree placed in it standing a little above the surface of the earth; the remaining mould was then shovelled in, gently trodden, two shovelfuls of manure placed on the surface round the stem in a circle two feet in diameter, and the work was finished. The time occupied in lifting and planting was about five minutes, yet it seems a lengthy description. Placing the manure round the trees was an after operation. My trees were planted in December 1854; the above work was done November 1856, repeated in November 1858, and is now being done November 1860. My soil being very wet and cold, it occurred to me to try a top dressing of soot recommended by a correspondent, who often instructs us through your columns. So last spring I gave to each tree a quarter of a peck, strewed on the surface over the manure placed there in the autumn. The effect was excellent; for my Apples, in spite of the cold inclement summer, are high coloured and of fine quality. This must be highly favourable to the health of the trees; for I have just observed that the balls of earth adhering to the roots of those which my gardener is removing to-day (Nov. 28), are bristly with those nice white spongioles, seemingly in full activity, which are all making their way into the surface, where the dung and soot were placed last spring.

My method of pruning is very simple—learnt from book. As soon as the trees were planted I cut off the tops of all those inclined to upright growth, so as to make my rows tolerably level; and in summer I cut off the end of every shoot with my penknife as soon as it had made four or five leaves, leaving three. In some cases, however, I deviated; for where a shoot was required of greater length to give symmetry, I did not shorten it till it had grown to the length necessary. My orchard is in fives. Thus I have 5 Hawthornden, which supply my kitchen from August till the end of October; 5 New Hawthornden carry me on till Christmas; 5 Rymers through January; 5 Dumelow's Seedling through February and March; 5 Gooseberry Apples till Gooseberries come in. Then for my dessert I have 5 Cox's Orange Pippin, 5 Ribston Pippins, 5 Mannington's Pearmain, 5 Reinette du Canada (a magnificent Apple), and 5 Sturmer Pippins: these carry me through the autumn, winter and spring. I might have planted some summer Apples and also have had greater variety; but I flattered myself I made at the time a common-sense selection, and I find I was not far from the mark. I am aware that larger trees, pyramids on Crab stocks subjected to the same treatment, might give more produce; but mine is a small garden, and I write this to let the owners of small gardens know that they may go and do something in the same way.

Pears on Quince stocks and Plums as bushes may be cultivated after the same method—they succeed perfectly. I must caution any of your readers who are inclined to imitate me against the reluctance to remove a tree when nicely established. I remember so well, when the first removal month of November came, feeling quite a pang of regret at disturbing my nice trees after their two summers' growth, and I thought of the old doggerel which I used to read in "Poor Richard's Almanac."

"I never saw an oft-removed tree,
Nor yet an oft-removed family,
That thrive like those that settled be."

I swallowed my reluctance, persevered, and now have my reward in seeing trees full of health and promise. I will end this by confessing that I was weak enough to leave a few trees unremoved till the third autumn after they were planted; their roots, I presume, reached the "nasty clay;" for, although their shoots were vigorous, their ends turned yellow, and the trees received a very severe check when they were lifted.—C.

VARIEGATED ARABIS.

SEEING in THE COTTAGE GARDENER of October 16th, a notice by "A YORKSHIRE CLERGYMAN," of the variegated Arabis as being one of the best variegated plants he knows, I write to say that I have seen it tried this summer in the front row for ribbon

planting, also as a self-bed, and must say it is the best plant I have yet seen for the purpose. In a bed it makes a perfect carpet, growing so compact, and the markings in the leaf so regular. One great desideratum is its hardiness and looking equally well during winter. When it becomes more known it will be used for filling up beds after the half-hardy plants are done, and, along with the dwarf evergreens, will have a most beautiful effect.

I shall be glad to give information to any one (enclosing a stamped directed envelope) respecting it, as I am sure any one once seeing it will never be without it.—JOHN KIRKBY, 22, Albion Street, Leeds.

GISHURST COMPOUND.

I AM not one of those numerous people always prejudiced against every new thing. My instincts lead me in the opposite direction to try all kinds of fresh inventions, with a firm belief in their efficacy. I bought a packet of Gishurst the first day I heard of it, and have never been without it since; but I have not always found the same effect from solutions of equal strength, as if there were a small quantity of some very powerful ingredient in the Compound which had not been equally diffused. Whether this be so or not, I am sure that two weak dressings are safer than one strong one: and my caution, which you were good enough to publish, referred to *strength* only—not to Gishurst as Gishurst.

One day at the end of last December I found my gardener painting the trees with the old mixture of soft soap, sulphur, and clay—a moderately thin preparation of perhaps three quarts. To this I made him add 4 ozs. of Gishurst; and as soft soap and sulphur never killed buds for me before, it is probable that too much Gishurst was used. My trees were never in a less temperature than 26° the whole winter, and having been thoroughly syringed during the summer generally with plain water, but with 2 ozs. of Gishurst to the gallon, added once or twice a-week, were absolutely free from spider.

This Compound is a capital thing; but all who have seen its action on young Rose leaves will hesitate before using 8 ozs. or 10 ozs. to the gallon to anything.

By the way, it would save much trouble in weighing if the Compound could be sent out in cakes of definite weight—say 2 ozs. or 4 ozs., instead of in one solid mass.—T. S. B.

SHORT CULTURAL NOTES.

DRACENA TERMINALIS.

"THIS was cut down last year, how should it be treated?" This is a strong-growing ornamental shrub or dwarf tree from the East Indies, and should be grown in a strong heat in a plant-stove, and with bottom heat at first, if practicable, until it arrives at a good size, when less heat and moisture will do for keeping it healthy. After being cut down little water should be given for some time; and when shoots or suckers come from the bottom the plant should be fresh potted in sandy loam and peat, and the pot at the first potting should be small rather than large. Every sucker thus thrown up will make a nice plant if potted separately. Every young shoot will also form a plant if put in a small pot, sandy loam and peat placed firmly round the sucker or cutting, and bottom heat given until roots have formed, just as is generally done with a Pine Apple sucker. Little water should be given until roots are forming. When growing, a nice, moist, shady atmosphere, and a temperature of 70° at night, and a rise of 10° to 15° during the day, will suit it. When fully established, and especially in the dark winter months, from 10° to 15° less of temperature will do.

DRACENA FERREA.

"I have a tall plant of this and wish to increase it, but I can get no slips or cuttings. How shall I manage?" What is said above will apply to this beautiful-foliaged plant. We can gather from what you state that the plant has only a single stem, and, perhaps, it looks quite as well grown in this as in any other form. Sometimes in such a case a small side shoot will show from four to eight or more inches in length, and when that is hard at the bottom—that is, when it is nearly a year old, slip it off close to the older stem with a sharp knife, and then place it close to the side of a small well-drained pot, fill with sandy loam, plunge in a moist heat, shade from sun, and ere long roots will be formed,

and the plant be grown as an established one. When many plants are required, and you do not wish to injure the appearance of the old one, nip out the point of the shoot or terminal bud, and that will cause a number of fresh side shoots to appear; and when firm and old enough these may be thinned out, and the thinnings treated as stated above. If a number of plants as early as possible, and not the appearance of the old plant, are the object, then I would let the plant get as dry as would not endanger the leaves flagging much, then cut the plant down to within a couple of inches or so of the soil, cut up the whole stem into pieces from two to three inches in length, treat these as cuttings, place in a hotbed, but dry rather than moist, and plunge the old pot also in a mild bottom heat to encourage it to throw out shoots, which afterwards may also be thinned and struck. After being fairly started, this plant and all the family will thrive well under rather rough treatment.

CROTON PICTUM, VARIEGATUM, AND LONGIFOLIUM.

"I wish to cultivate and propagate these, so as to get them to grow freely and in abundance." The general culture will be much the same as for *Dracæna*. The temperature will need to be equally high, and the compost will be better if supplied with more sandy peat and a few bits of charcoal. I fear the cutting-down process will not answer for them. However, there is no necessity; as the plants very readily, with a little nipping out of the leading buds, may be made to take the bush form. The points of all these shoots, if cut back three or four inches from the point, will also be hard enough for cuttings. Small side shoots three or four inches long and somewhat hard at their base will form, however, the best cuttings. The lesser the leaves on such shoots, in proportion to their size, the better will they strike. The plant should be allowed to be rather dry before the cuttings are removed, dress the base of the cuttings with a very sharp knife, and shorten or remove the lower leaves. Take care that none of the acrid juice drops on your hands when doing this work. Allow the ends of the cuttings to be exposed in a dry, warm place, whilst the tops are kept moist and shaded for a few hours before inserting them in pure sand over sandy peat in a well-drained pot. The pots may then be set in a hotbed and covered with a bell-glass, kept shut down several hours in the middle of the day, but with air on night and morning. As soon as struck place singly in small pots, and keep growing vigorously in a moist atmosphere and a temperature ranging from 70° to 80°, and on to 90° at mid-day. When fully established in six or eight-inch pots, the temperature may range from 55° to 65° at night, and 10° to 15° more from sunshine. This refers, however, chiefly to the dark months. In the heat of summer they are not likely to quarrel with temperature.

CHOROZEMA LAWRENCIANA.

"How shall I treat this to have it in bloom next August?" The blooms sent as to colour were too far gone to enable us to be certain of the species, but being in bloom now there will be little difficulty in having it in bloom by the end of August. Most of this family of plants prefer blooming profusely in spring; but by altering the treatment much might be done to have them in flower when most desirable. Those that bloom in the autumn might thus, with a little coaxing, have heat and light to grow the wood; and heat and light to perfect the wood when grown and then free flowering would come as a matter of course, without the interruption of our cold, cheerless winters as a long rest, as most of the species now have. Allow, therefore, your plant to produce flowers as long as it seems disposed to do—say until Christmas, then prune it considerably back, but never going beyond the base of the present year's shoots. Place the plant in the warmest end of your greenhouse, and give little water or air until you see the fresh shoots breaking. Even then do not give too much water. When the shoots are an inch or two long repot the plant, if necessary, into the same sized pot after removing a little of the washed soil, or into one a size larger. Drain the pot well, and use as compost three parts fibry heath soil, one of fibry loam, and half a part of a mixture of silver sand and nodules of charcoal about the size of Peas and horse Beans. When potted, water with pure soft water heated at least to 60°, and place the pot again in the warmest end of the greenhouse—in fact, a temperature of from 50° to 55° will suit it best as it grows. Give water as needed, but no great amount of air will be required, the chief thing at first being to get a lot of nice stiff shoots from six to twelve or more inches in length. About June begin to give more air, and by the end of the month expose

the plant still more to all the sun it can get—and air, too, so as to ripen the wood. A cold pit with glass on and air top and bottom would just be the place. In such circumstances I would expect the blooms to come in the beginning of August.

CROWEA SALIGNA.

"I have a nice plant of this with bloom still on, I wish to have it good next September." The general culture of this lovely plant has been several times given. We have seen it fine in May and June, the growth having been made in summer, ripened pretty well in autumn, rested in winter, and excited into bloom by the advancing heat of summer. For the purpose indicated we would treat it as stated above for the *Chorozema*, but a fortnight or so after being pruned back and placed in the warmest end of the greenhouse we would remove it to the coolest end of your plant-stove, or to a house such as a vinery or Peach-house at work, giving air to prevent the shoots coming weak. When they were from twelve and more inches in length, we would remove the plant to a warm, close corner in the greenhouse for a week or two, and then to a sunny airy part. It might be either kept there or in a cold pit, where the leaves would get plenty of sun and air. By the beginning of August water should be gradually curtailed, so that the sun should have more power, and the fine warm days of September may be expected to open the bloom. In most cases the plants that enjoy the long comparative rest of winter will generally bloom best. This plant should rarely be below 45° in winter, and the drainage must be very particular, as the least sour, sodden soil is ruinous.

R. FISH.

GREEN STAINS ON STONE-WORK.

IN No. 632, page 81, of *THE COTTAGE GARDENER*, I see an answer to "EIGHT-YEARS SUBSCRIBER" respecting green on stone stage of conservatory; and as I have been long troubled with this cryptogamic growth on my stage, I beg to state what I have as yet found to be the best preventive. I have tried various things, but I find nothing to equal chloride of lime applied in the following manner—viz., after clearing the stage of all the plants sprinkle it with water, then dust well with chloride of lime; afterwards brush the stage well over till a good lather appears, leave it a few hours, and then wash it; dust and brush it again, leaving for about an hour, when all may be washed with a soft cloth not over wet; some parts of the stage may still appear green a little, but in a short time it will disappear. An application of this kind whenever the plants want rearranging will be found an entire preventive, and will make a stage look well. "EIGHT-YEARS SUBSCRIBER," giving it a fair trial, will find it satisfactory.—J. B. L.

WHY FERNS ARE GROWN UNDER GLASS— THE LILY OF THE VALLEY TREE.

WILL you have the kindness to tell me what advantage is gained by putting glass over Ferns? I have some growing without any in a sitting-room, and give them no more attention than I would to any ordinary plant. They are doing very well, and the only fault I can find is that they are growing too fast. The appearance they present at present is very pleasing. I should wish them to retain it as long as possible, and, therefore, apply to you in hopes that you will kindly tell me how I could retard their growth consistent with their health. My only objection to a shade is, that it will make them look artificial; but I am not sure that it would prevent their luxuriance, so I did not get it until I hear your opinion.

Would you also be good enough to say what sort of compost is most suitable for the Lily of the Valley tree, which is, I think, some kind of Citrus, but am not sure? I have it at present in yellow loam, sand, and peat, but the leaves are beginning to turn yellow and drop off.—A. E. B.

[Ferns placed in a sitting-room are protected from the dry atmosphere of the air, and are also sheltered from dust when covered with glass. The glass prevents the escape of the moisture from the soil, and retains it in the air enclosed by the case. Dust is always injurious to leaves, by stopping up the pores of the leaves, which are the lungs of the plant. You might keep your Ferns from growing so rampant by never repotting them, but then you may expect the older fronds to decay sooner, and the

young ones to come less every year. As your Ferns are growing so well you cannot do better than let well alone; you cannot stunt their growth without injuring their health and beauty.

Some Ferns are deciduous—that is, the fronds die down in winter, but the buds remain alive. Such kinds require to be kept cool and only just moist enough to keep the roots alive. If you have any such, place them in a cool room, and water only occasionally.

Are your Ferns named? If they are, we should be obliged by a list of them.

Lily of the Valley tree is, as you conjecture, a species of Citrus. It is what nurserymen call the Otaheite Orange. The older leaves will turn yellow and drop off. Perhaps you have given too much, or may be too little water. Your compost would be improved by the addition of a small quantity of well-decomposed dung, added in the spring when you repot the plant. When it is growing fast in summer give it a watering now and then with weak manure water. This will improve the colour of the leaves.]

LILIUMS.

I WANT to have a word or two about these favourites. Some good people that one comes in contact with seem to think them not hardy. I have a goodly number of them for a private garden. I grow annually about six pots of them, each containing not more than three bulbs, for conservatory decoration. In the borders I have a considerable number, which I allow to take their chance about the weather, but make it a rule to manure well and deep any place where I intend to plant them. I never keep the same bulbs in pots more than one season, but plant them in the borders and take up fresh ones, and the strongest too. I find by this plan that I get spikes with from twelve to sixteen flowers on. I am quite satisfied about the hardiness of the Lilium, for I had some last year that were frozen to the quick, but they did not seem at all affected by it. My friend, Mr. Tipping, an amateur, grows them on Ashton Moss, a place where they are scarcely ever dry, and he laughs at the idea of protecting them. To see his magnificent spikes of flowers would do good to the eyesight of a genuine lover of them. He never allows them to want, but gives them plenty of good food to live upon.—J. HAGUE.

HEATING A SMALL GREENHOUSE BY GAS.

MANY of the readers of THE COTTAGE GARDENER may be interested to know that I have been successful for two seasons past in the use of a small lean-to greenhouse, forming an elongation of a glass verandah. It is 11 feet by 7 feet, and 10½ feet high at back. I keep the frost out by one of Kimberly's small gas stoves, to which is attached a pipe running under the stage almost the length of the house, and terminating in a wash-house chimney. On the top of the stove is a cistern of water, which produces the necessary evaporation. I have an outside roller-blind for use in very severe weather. Last winter I kept with perfect safety several hundred Scarlet and fancy Geraniums, most of which were in excellent order for turning out in the spring. The house is now (November 21st) gay with Chrysanthemums and Geraniums, chiefly cerise and rosea superba. In the stove in early spring I raised without difficulty seedling Lobelias, Petunias, Cobceas, and Asters, which have since flowered remarkably well, considering the unfavourable season. I have a galvanised iron pan about 2 feet square and 4 inches deep placed over the stove for this purpose, into which I put about an inch of crocks, and then some old sandy turf soil. The gentle bottom heat of the stove (about 60°) brought up the seeds capitally.

As a "cottage gardener" under circumstances which compel economy, I should like to inquire if last year's seeds of Asters, Lobelias, Petunias, &c., will be safe for next spring's sowing, as I happen to have a good supply of these on hand which have produced excellent blooms this year. [Yes.]—BLANC.

MIS-SPELT NAMES AT THE CRYSTAL PALACE SHOW.

MY attention being called to your report of the Crystal Palace Chrysanthemum Show, in your Number of November 20th, by several of my friends, I take the opportunity of informing you of a mistake (a very unjust one), you made with regard to me not spelling the names of my plants correctly. The kinds

I exhibited were, Drin Drin, La Vogue, Helene, Giralda, Duruflet, and Cedo Nulli, names which were copied from a Chrysanthemum catalogue. As for one called Dr. Bois Duval, it was not in my collection.—JAMES WESTON, 9, Park Terrace, Clapham Park.

[We forwarded the above to Mr. Beaton, and he replies as follows:—"This is like the jackdaw getting shot among the rooks—he had got into bad company. There ought to have been a better separation between Mr. Weston's plants and those of the writer of Dr. bois; but that would not save any nursery catalogue or a transcript from it from criticism. Mr. Weston's Drin Drin was put down 'Drine Drine,' and 'Ceodnella' for Cedo Nulli most certainly, or else he allowed his name to be set against the plants of some one who was a good grower and a bad speller of common names. I ought to have been a better shot certainly, and I regret very much if ever I see white feathers flying about after shooting at what I considered a black bird. All the reparation I can make Mr. Weston is to drink his health at Christmas, and wish him and myself better luck next year.—D. BEATON."

In addition to Mr. Weston's letter, we have had another, which we did not forward to Mr. Beaton, inquiring satirically if "Curtius Quintus," is correct, or if the writers of Roman history were wrong in naming the hero "Quintus Curtius?" We must leave this query to be answered by the florist who chose to name his Chrysanthemum "Curtius Quintus;" but at all events he spelt the names correctly.

Mr. Beaton pointed out an error which was liable to mislead, and the best course for any one to pursue who commits an error is to admit it, and try to do better in future.—Eds. C. G.]

CHEAP HOT-WATER APPARATUS.

As requested by you, I have great pleasure in sending you a sketch and description of the hot-water apparatus I alluded to in my former letter. It is an arrangement designed to burn a cheap kind of fuel—viz., the refuse from the fires in the dwelling-house, after getting rid of the mere dust by sifting with a fine sieve, and mixing with a small quantity of coal of the non-caking kind, as any very bituminous coal is apt to choke up the fire. I shall call it after the inventor, "Bishop's Hot-water Apparatus."

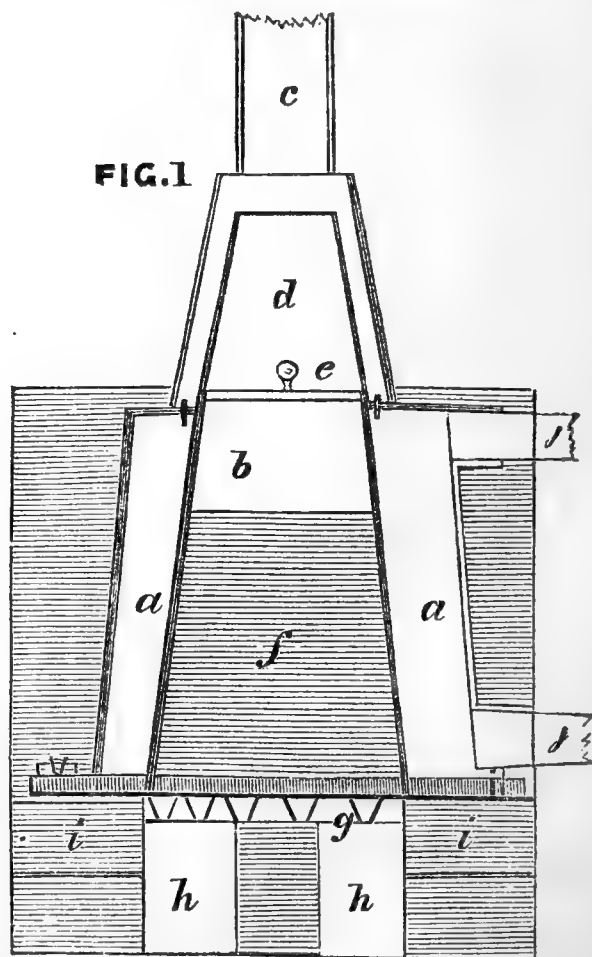


Fig. 1 is a general elevation of the apparatus in section, scale an inch and a half to a foot; a boiler, b firebox, c chimney,

d door, *e* damper, *f* fuel, *g* grate, *h* ash-pit, *i* *i* brickwork, *j* and *j'* flow and return pipes.

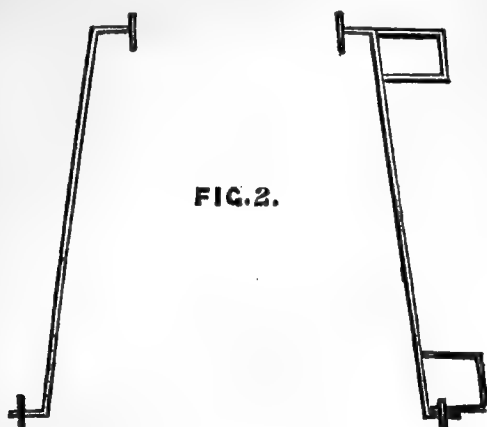


FIG. 2.

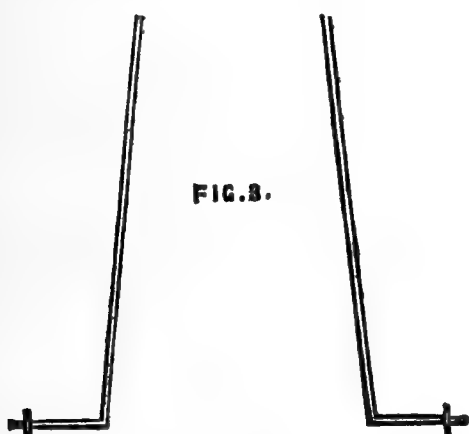


FIG. 3.

Fig. 2, outer case of boiler; fig. 3, inner ditto, or firebox; fig. 4, general plan; fig. 5, grate; fig. 6, damper.

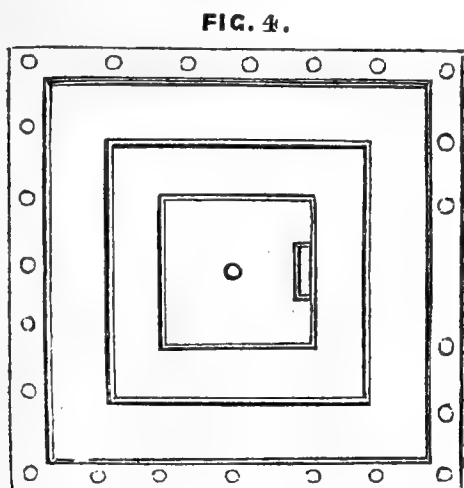


FIG. 4.

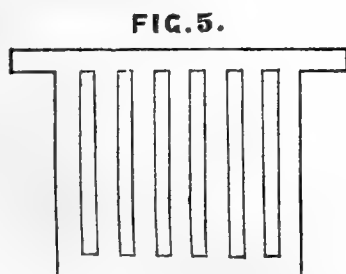


FIG. 5.

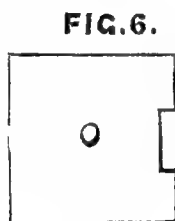


FIG. 6.

The boiler is of cast iron, quarter inch thick, and formed of two pieces, as shown in *figs.* 2 and 3, bolted together at the bottom flanges with quarter-inch bolts (which can be had at the ironmongers for 6*d.* a-dozen), the joint being made of red and white lead on cardboard, and the top joint of the same cement and hemp well driven in the V groove where they fit together at top.

The lower part of the chimney forms the entrance to the fire and damper, which is formed of stout sheet iron, with a ring attached for removal. And here consists the great economy of the working, as the damper rests on the top of the firebox, and is provided with an aperture for draught, which in the one I

have in use is one inch and a half by three-eighths of an inch; but, of course, the size of the draught-hole must depend upon circumstances. Two or more dampers might be at hand with different sized holes for draught. In any case the heat is all, or nearly so, given out to the boiler, and but little escapes up the chimney; as was proved by a boiler of this kind being used for two years for heating a small greenhouse, and a cork inserted in a hole in the chimney at one foot from the fire not being burnt in all that time. The grate is such as is usually used for small furnaces, with two of the lugs taken off and the other two rounded as pivots and supported in the brickwork; the front being held up by a moveable brick, so that the grate can be let fall when clearing out the fire at any time. The whole may be enclosed in a wood case filled with any non-conducting material, or wrapped with felt, as may be convenient.

I trust I have made the description sufficiently clear to any brother amateur who may wish to make one for himself. The castings cost me somewhere about 18*s.* or 19*s.* I say nothing to "W. P. H." about pipes, as Mr. Fish's answer does that better than I can. I shall be happy to give any more particulars if needed.—JAMES ALLEN.

GAZANIA SPLENDENS VERSUS RIGENS.

GREAT numbers of gardeners and others appear to be totally unacquainted with the difference between the above two *Gazanias*. *Gazania rigens*, or, as it used to be called, *Gorteria rigens*, is not such a profuse bloomer as *Gazania splendens*, seldom having more than two crops of blossom in one season. I have known it for the last sixteen or seventeen years. I first saw it at Muntham, near Worthing, then the residence of — Fitzgerald, Esq.; and Mr. Cordery, the gardener at that time, kindly gave me some cuttings of it, and my father still retains some of the original stock. I never saw *splendens* until this last spring. When entering on my duties at this place in February, I observed in one of the late vineries some store pots of *Gazanias* labelled *Gazania uniflora*, which in foliage it much resembled, but still it looked too stiff. I asked one of the young men the colour of its blossoms. "Orange yellow, with a dark belting or ring at the base of the petals." Well, thought I, you are not *uniflora*, and you are not *rigens*. What and who are you? Not having seen *splendens* I was in a fix; but having read something the preceding autumn referring to *splendens*, I hoped I might have the real *Simon Pure*, which eventually proved to be the case, and it is a very different thing to *rigens*, blooming as freely as *uniflora* with all the beauty of *rigens*.

During the time I lived at Bignor Park, I grew the latter, and occasionally planted it in the mixed borders, but being such a shy bloomer it was not of much service. I believe that many have been growing *splendens* and calling it *rigens*, and that is where the difficulty has arisen.—JOHN GADD, *the Gardens, Willersley, Matlock.*

MILDEW ON GRAPES.

MR. ASHMAN (at pages 80 and 81) is decidedly wrong in ascribing the mildew on his Grapes to syringing. I never had the pest on Grapes until this year, and I ascribed it to an absence of sun and too low temperature. I never syringe my Grapes after they are in bloom; but mildew made its appearance in one small vinery a few days before I came here, in the next in May, the next in June, and in the late house in August, and it always made itself visible at the coolest end of the house first. By a timely application of sulphur to the berries and flues, with a high temperature, I so far kept it at bay that little damage was done; but I must acquit the syringe of any blame. I believe Mr. Ashman's to have mildewed from the bunches being near the front windows, and, consequently, much cooler than in the more elevated parts of the house. Perhaps they may have taken cold some sunny morning, and a little air given injudiciously causing a stagnation. I had given no front air to mine, and mildew was observed at the top of the Vine first. I always have a free circulation of air in the houses without opening the front windows, as the glass is not close glazed, and the leaves at the lowest part may be observed to move.

I have found Grapes shank very much this season, and no wonder, with roots at 50° and tops at 60°, 65°, or 70°. I have some planted inside in a deep pit formerly used for Pines, with a flue running under it quite free, and Muscats of a rich amber

colour; but those outside are a miserable failure. Many of the surface roots on those planted outside I found to be dead from cold and wet. The borders are dry and open, resting on limestone rock; but the situation is high and cold.—J. GADD, *Willersley*.

ENTOMOLOGICAL SOCIETY'S MEETING.

THE November Meeting of the Entomological Society was held on the 5th inst., the chair being occupied by the President, J. W. Douglas, Esq., who exhibited a new British Beetle belonging to the family Staphylinidae, *Mycetoporus angularis*, taken on the 7th of the preceding month near Shoreham.

A number of donations to the library received since the last Meeting were announced, including a valuable series of American works—namely, the Patent Office Reports on Agriculture for 1857, 8, and 9, presented by the Government of the United States; the Annual Report of the Ohio State Board of Agriculture; the Annual Report of the Board of Regents of the Smithsonian Institute; the Proceedings of the Boston Society of Natural History; and Mr. Sharwood's work, containing an enumeration of all the works on entomology hitherto published in the United States. A number of other entomological works and periodicals were also presented, and thanks ordered to be given to the several donors.

Dr. Power exhibited specimens of the *Mycetoporus angularis* (also exhibited by the President), which had been taken by Mr. Brewer near Reigate; also a number of other rare British Beetles, including *Sphindus Gyllenhalii*, found in fungus in the New Forest, *Læmophæus bimaculatus*, *Heterius quadratus*, found in the nest of *Formica rufa* at Weybridge. Also *Quedius infuscatus* of Erichson, found by Mr. Crotch in the nests of *Formica fusca*; and *Aumœcius brevis*, taken by Mr. Haward on the sands at Southport.

Mr. McLachlan exhibited some rare species of Phryganeidae (Caddice Flies), including *Limnophilus borealis* and *Agrypna Pagetana*, taken at Ranworth fen.

Mr. Scott exhibited some specimens of the very rare blind Beetle, *Leptinus testaceus*, lately found by himself in a dead mole near Woolwich; also *Philanthus splendidulus*, taken under the bark of Oaks at Abergavenny.

Mr. Ianson also exhibited various new and rare British Beetles, including three species allied to *Bradycellus harpalinus*.

Mr. Stevens exhibited some new and very beautiful Beetles collected in Cambodia by M. Mouhot, including *Baladeva Walkeri* (hitherto unique), and some splendid Buprestidae, Longicorns, and Anthrelidae.

Mr. Ianson exhibited the nest of one of the solitary mud Wasps of the genus *Pelopdus*, which had been found in the inside of a pianoforte returned from India, communicated to him by Messrs. Collard.

A paper was read by F. Walker, Esq., F.L.S., containing descriptions of a considerable number of new species of exotic Lepidopterous insects contained in the collection of W. W. Saunders, Esq., F.R.S., Treasurer of the Horticultural Society.

Another paper was also read by Mr. G. R. Waterhouse, of the British Museum, upon the species of Chrysomelidae contained in the Linnean and Banksian collections preserved in the Linnean Society, and which he had carefully examined in order to ascertain how far the modern nomenclature of these insects agreed with that of the authentic types described by Linnaeus and Fabricius. In most instances this was found to be the case; but it was curious that some of the most common species were found to have been misnamed.

A new part of the Transactions was announced as ready for delivery to the members.

TO CORRESPONDENTS.

WALL FOUR FEET HIGH (Frost).—The wall being only twenty feet long would not afford space for more than one tree, however you might train it. Unless you sink a path you could not get under the glass. If you make the glass in moveable frames, the best use you could turn the structure to would be to grow some Apricot trees in pots.

PLANTING A VINERY AND PEACH-HOUSE (A Constant Subscriber).—We would decidedly, in either case, plant inside—it saves much annoyance, and insures the safety of the trees without any trouble. If there is to be a border outside, let the front wall be on arches and the inside border rather the highest, the soil just covering the top of the arch by a couple of inches or so. Secure drainage in either case; and for Peaches from eighteen to twenty-four inches of good, fresh, brown, rather sandy loam—giving strength, if necessary, by top dressings and manure waterings. For the

Vines use similar soil mingled with a sixth of lime rubbish, broken bricks, and pieces of charcoal; and for every nine square feet of border use a bushel of bones broken rather small, well mingled with the soil.

CLEANING A GREENHOUSE FLUE (Inquirer).—A chimney-sweeper's long broom and a wooden hoe fixed to a long pole will do no harm if the plastering is right. Holes should be opened at the corners: it is best when these are left on purpose. We would, however, rather be without plastering inside. It is better outside if it cannot be avoided. Flues should be cleaned in a greenhouse every season; if the winter is severe also at midwinter. Those of forcing-houses oftener if the full heat is to be obtained. Fire-clay is the best mortar for such purpose; but we have found good lime mortar almost, if not equally, good. See what is now being stated as to furnaces, flues, &c.

MISMANAGED VINES AND LATE VINERY, &c. (J. W.).—We think it would be waste of time and labour to bother with these mismanaged Vines. Single buds inserted at the end of next month, and treated as frequently recommended of late, would beat them far before the end of the season. We do not think you would do great good by lifting the Vines now from the wall and repotting them—that is, if you expected them to fruit at all early next season, and for two reasons. The first is, that you would injure the roots considerably in the lifting; and secondly, because, though the rods may be strong, we should doubt if they were well ripened out of doors in such a season as the last. If they are well ripened, however, and the buds are plump, we will tell you how we once succeeded in similar circumstances. We had a heap of leaves in December that produced a very nice heat from fermentation. We raised the Vines as carefully as possible, securing as many of the roots as could be, and then transferred these roots carefully into soil in fourteen-inch pots, the soil being neither dry nor wet, and rather rough than fine. We then plunged the pots about two inches over their rim in the heap of leaves, where they obtained a heat ranging from 65° to 80°, taking care that the heat did not get higher, and leaving the stems tied to stakes outside. In a month new roots were working in the soil, and then for eight days the stems were allowed to lie on the top of the heap, where they began to swell a little; and the plants altogether were moved into a house, where the pots were again plunged in a mild heat, and the tops kept to from 50° to 60° until the buds were all broken and shoots growing. You will judge whether this plan is worth your while. As to the lifted Vines, we would prevent frost entering; and as soon as possible we would cover the border with leaves and dung, so as to raise the heat to within two inches of the surface to 75° and 80°. You would be more successful if you kept the border dry and warm after the replanting, so that the roots might begin to work at once. We have raised Vines in February and had a good crop, but it was a risk. If your Vines are in good order you need have no risk for a late crop. Your *Begonia* has been too damp, and has been exposed some day to a bright sun. The flower is a *Loasa*, most likely *lateritia*. Take care of the prickles, they are very poisonous. They are beautiful climbers, but we have not grown them much since a friend nearly lost his hand by them. Rather too many questions at a time.

VERONICA, CHOROZEMA, AND DRACENA (A Lady Amateur).—We are not sure of the name of the *Veronica* as the leaves were injured, but a cool greenhouse in winter will suit it admirably; and refraining from giving it much water until June and July will, most likely, cause it to bloom in August. For *Dracena* and *Chorozema* culture see another part of this Number for what Mr. Fish says.

PRUNING PYRAMIDAL AND WALL TREES (Scotus).—If your pyramids have not made too much rank wood we would let well alone. They by no means require moving every year, or root pruning every year, unless when growth would neutralise fruitfulness. If the growth is rampant perhaps the roots had better be pruned, and a little of the old surface of the soil may be removed and fresh added. All trees not growing too strong will like that. The strong shoots—that is, very strong, should have been removed or rubbed off in summer. If the other shoots have had their points pinched out in July, so much the better as a general rule; when that was omitted shorten back now to a couple of inches or so. Summer pruning and nipping is what is wanted to form fruit-buds. In the tree referred to we would cover up the whole space with a mixture of soil and cowdung, tie a piece of calico firmly over all, and then paint it outside with light oil paint.

GREENHOUSE FERNS (H. T.).—Admit air as freely as possible to them at all times when not frosty. Keep the soil only just damp through the winter. In our Nos. 517 and 518 you will find full directions for their culture.

WINTERING ACHIMENES AND TIGRIDIA PAVONIA (Violet).—It matters not whether you keep your *Achimenes* roots dry in the pots in which they grew, in a temperature not below 45°, or take them out and place them in bags along with dry sand, and place them in a cupboard or drawer in the kitchen, where they will not be much over or much below the above temperature. When you want to start them, place them in shallow pans of sandy earth, and pot them when one or two inches grown. The *Tigridias* are much harder. They might be taken up, and placed in large pots or boxes in large lumps, and kept under glass until the leaves faded, and afterwards any place would do where frost was merely excluded. In spring you might separate the bulbs, placing all the strongest together. Let them be started in a cold frame or pit and transplanted at the end of May, or plant at once out of doors at the end of April.

LIST OF FERNS AND MOSSES (T. B.).—These for your herbarium, with labels to paste on uniformly, you can obtain of Mr. Pamplin, Bookseller, Frith Street, Soho.

PLANTING A ROSEY (A Subscriber).—There is neither law nor rule for or against the arrangement and planting of roseries; so every one is at liberty to plant Roses as he lists. If you make good beds for them they will grow as well as in a rosery.

PLANTS FOR EXHIBITION, &c. (R.).—All the plants you name are either too early or too late in bloom about London to be of any use at a flower show in August. There is an *Allamanda* with purplish-blue flowers, something of the colour of a fine *Gloxinia*, and it is now in flower-bud within so many hours of London; and by the end of next February it will be a splendid object trained against garden walls round Lisbon as Currant trees are round us. The best Heaths to come into flower by the end of August are those we have so often mentioned from the September Shows at the Crystal Palace.

TROPÆOLUM SEEDLING (W. Prince).—This is the prettiest of all the *Tropæolum* crosses we have seen. It is more after *Triomphe de Godalming* in leaf and shape of bloom, with all the divisions deeply stained and shining with purple with small orange margins. If this colour holds good in

summer this plant will be a valuable thing to all but genuine florists, who care little or nothing for colour so they get a round shape.

CLAY SUBSOIL (*An Amateur, Morpeth*).—The clay subsoil must be drained, and six inches deep of it dug up and burned, and mixed with the four inches of surface soil. It will then, probably, grow any kitchen-garden crop.

NAMES OF FRUIT (*M. A.*).—The specimen of Pear is a bad one; but from what we can judge it appears to be Brown Beurré. The Apple is certainly not Wyken Pippin; but from the name you say it is known by is, in all probability, a local variety.

NAMES OF PLANTS (*A Subscriber*).—Plants in the condition of those you have sent cannot be named except by chance. 1 seems to be a *Coleonema*; 2, *Pittosporum undulatum*; 3, looks like *Fuchsia excorticata*; 4, some *Metrosideros*.

POULTRY AND BEE-KEEPER'S CHRONICLE.

POULTRY SHOWS.

DECEMBER 3rd, 4th, 5th, and 6th. BIRMINGHAM. *Sec.*, Mr. John B. Lythall, Offices, Unity Buildings, Temple Street, Birmingham. Entries close November 1.

DECEMBER 6th. HULL AND EAST RIDING. *Sec.*, G. Robson, 25, Waterwork Street. Entries close November 22nd.

DECEMBER 12th, 13th, and 14th. NORTHERN COUNTIES (DARLINGTON). *Sec.*, J. Hodgson, Darlington. Entries close Nov. 19th.

DECEMBER 12th, 13th, 14th, and 15th. CRYSTAL PALACE. (Poultry, Pigeons, Rabbits, Ornamental Water Fowl, and Pheasants). *Sec.*, Mr. W. Houghton. Entries close November 10.

DECEMBER 18th and 19th. LORD TREDEGAR'S, at Newport, Monmouthshire. *Sec.*, Mr. C. H. Oliver, Commercial Street, Newport. Entries close Nov. 21st.

DECEMBER 21st and 22nd. HALIFAX PIGEON SHOW. *Sec.*, D. R. Edgar. Entries close December 8th.

DECEMBER 27th, 28th and 29th. KENDAL. *Hon. Secs.*, C. C. Whitwell and T. Wilson. Entries close December 12th.

JANUARY 2nd and 3rd. CORK. *Sec.*, J. Dowling, Janeville, Sunday's Well. Entries close December 15th.

JANUARY 16th and 17th. POULTON-LE-FYLDE. *Hon. Sec.*, J. S. Butler.

JANUARY 30th and 31st. ULVERSTON. *Secs.*, Mr. T. Robinson and Mr. J. Kitchen. Entries close January 10th.

FEBRUARY 6th and 7th. LIVERPOOL. (Poultry and Pigeons). *Sec.*, Mr. A. Edmondson, 4, Dale Street.

JUNE 4th, 5th, 6th, and 7th. BATH AND WEST OF ENGLAND.

N.B.—Secretaries will oblige us by sending early copies of their lists.

BIRMINGHAM POULTRY SHOW.

WE always approach Bingley Hall with feelings of unmixed pleasure of late years. There was never any reason connected with the Show or its management why there should be any alloy in our feelings; but some years since its finances were not flourishing as they are now; its subscribers were not as numerous, and there was not the same certainty that the meeting would be prosperous, because the expenses were not then met beforehand as they are now. Entries and attendance were alike numerous, but "the debt" rode on the shoulders, and was the "Old Man of the Sea." With such an executive as it can boast recovery was certain, but the time occupied by the process was of necessity long. We still look with surprise on the building, unique of its kind, which was erected with no other certain source of income than the proceeds of a Cattle and Poultry Show, and which arose solely from the latter. We admire the courage of its projectors, and those who carried it out; and we associate ourselves gladly with the feelings that must arise on the approach of freedom from the debt, and profitable remuneration to the shareholders. It may fairly be called the parent of Poultry Shows. From it all others have chosen their rules, and that which is done or sanctioned at Birmingham is at once admitted everywhere. It is the place where the comfort of animals was first studied, and every experiment tried in order to discover that which was the most fitting food for birds in confinement. The success has been signal, and it is notorious many are in much better condition when they leave than when they arrive at the Show.

Here, also, a proper classification of breeds and division of classes first took place. With the liberality that has always distinguished this Committee, they adopted special rules for the various classes, and instructed their Judges to award prizes to each breed separately, thus placing the amount to be awarded to birds that had no place in the prize list in the hands of amateurs.

If any new or distinct variety could produce eight or nine pens, it at once became entitled to two or three prizes, and could fairly ask for a class. It may not be uninteresting to enumerate some of the candidates for distinction that have appeared for a time and then disappeared as a class. Ptarmigans, Anconas, Surrey, Andalusians, Cuckoo Cochins, Emus, Rangons, Ghoorooks, and Sultans have shown, and still show, in small numbers, but it is seldom any of them can make good their claim to a separate award. The exception to this rule has

been the Brahma Pootra, which has made itself a position and an important class.

Another great merit of Birmingham is, that owing to the excellent condition of the birds when they are sent away it has become the mart to which numbers resort with a view to purchasing. We believe we are below the actual sum when we say that, although sales did not form part of the first Shows, yet that between £7000 and £8000 worth of poultry has been sold in Bingley Hall. The birds are carefully and punctually sent away; the prize-money and the proceeds of sales are immediately paid. With all these things in favour of the Show, there is this year a slight falling off in the number exhibited; and lest there should be any misapprehension as to the cause, we will explain it to our readers.

First, the Crystal Palace Show takes place the week following Bingley Hall, and as most exhibitors show at both places, they are obliged to keep some birds in reserve for the latter; as, although some may have iron constitutions, and go, as many will, from one Show to the other without injury, yet others, to make sure, will require to be kept in clover till the day of trial. For this reason, although there is no decrease in the number of exhibitors, there is in the number of pens, because many are unable to send as many as they usually do, and as they would have done had six weeks intervened as usual between the Shows. But for this the probability is, that there would have been a considerable increase in numbers this year. We hardly think it desirable there should be anything of the sort, as a thousand pens of the best birds in the world must be sight enough for the most enthusiastic amateur or admirer; but when the Committee wish it they can accomplish it by a slight alteration in the rules. At present none but a subscriber can show, and a subscription of £1 entitles to four entries. It has been objected that many would like to show one or two pens, but cannot afford or do not like to pay a sovereign for doing so; whereas, if, as at other Shows, they could enter by paying a fee for the pen, hundreds would gladly do so. It is our duty to mention these things. Our own opinion is that where a Show has been conducted as successfully, and where a Council has become as deservedly popular as that of Birmingham, there is no error in an arrangement or rules.

By dint of great exertion we give our readers the principal awards; we will next week review the classes, and comment on this our great annual meeting more fully. As even the Press cannot gain admittance till Monday morning, and we must be in type in the evening of that day, we can do no more.

DORKINGS (Silver Grey).—First, Mr. Dolby. Second, Hon. W. W. Vernon. Third, Lady Dabense. Fourth, Mr. Bartham. *Chickens*.—First and Third, Mr. Cargie. Second, Mr. Dolby. Fourth, Mr. Hill.

DORKINGS (Coloured).—First and Cup, Marchioness of Winchester. Second, Lady Louisa Thynne. Third, W. W. Vernon. Fourth, Captain Hornby. *Chickens*.—First, Captain Hornby. Second, Mr. Wakefield. Third, Mr. Shaw. Fourth, Lady Dabense. *Hens*.—First, Capt. Hornby. Second, Mr. Bromley. *Pullets*.—First, Miss Pattison. Second, Mr. Wakefield.

DORKINGS (White).—First, Miss Jackson. Second, Mr. Hutton. *Chickens*.—First, Capt. Beardmore. Second, Mr. Hutton.

SPANISH.—First, Mr. Teebay. Second, Capt. Hornby. Third, Mrs. Hall. Fourth, Mr. Brundrit. *Chickens*.—First and Cup, Mr. Rake. Second, Mr. Rodbard. Third, Mrs. Hyde. Fourth, Mr. Teebay. *Hens*.—First, Mr. Fowler. Second, Miss Hyde. *Pullets*. First, Mr. Rake. Second, Mr. Weston.

COCHIN-CHINA.—First and Cup, Mr. Tomlinson. Second, Mr. Cattell. Third, Mr. Stretch. *Chickens*.—First, Mr. Stretch. Second, Mr. Tomlinson. Third, Mr. Kellaway.

COCHIN-CHINA (Brown and Partridge).—First and Cup, Mr. Stretch. Second and Third, Mr. Cartwright. *Chickens*.—First, Mr. Cartwright. Second, Mr. Stretch. Third, Mr. Tudman.

COCHIN-CHINA (White).—First, Mr. Chase. Second, Mrs. F. Blair. *Chickens*.—First, Mr. Dawson. Second, Mr. Chase.

BRAHMA POOTRA.—First and Second, Mr. Teebay. *Chickens*.—First, Mr. Craigie. Second, Mr. Teebay.

POLANDS (Black).—First and Cup, Mr. Edwards. Second, Mr. Dixon. *Chickens*.—First, Mr. Edwards. Second, Mr. Dixon.

POLANDS (Golden).—First and Cup, Mr. Dixon. Second, Mr. Conyers. *Chickens*.—First and Second, Mrs. Pettat.

POLANDS (Silver).—First, Col. Clowes. Second, Mr. Dixon. *Chickens*.—First, Mr. Dixon. Second, Mr. Adkins.

HAMBURGH (Golden-pencilled).—First, Mr. Wilkinson. Second, Mr. Martin. Third, Mr. Hardy. *Chickens*.—First, Cup, and Third, Mr. Munn. Second, Mr. Martin.

HAMBURGH (Golden-spangled).—First and Cup, Mr. Lane. Second, Mr. Worrall. Third, Mr. Dixon. *Chickens*.—First, Mr. Lane. Second, Mr. Worrall. Third, Mr. Hyde.

HAMBURGH (Silver-pencilled).—First and Cup, Mr. Keable. Second, Mr. Kerr. Third, Mr. Dixon. *Chickens*.—First, Mr. Keable. Second, Mr. Munn. Third, Mr. Griffith.

HAMBURGH (Silver-spangled).—First and Cup, Mr. Dixon. Second, Mr. Teebay. Third, Mr. Beldon. *Chickens*.—First, Mrs. Pettat. Second, Mr. Hardman. Third, Mr. Beale.

HAMBURGH (Hens of any variety).—First, Mr. Davis. Second, Mr. Beale. Third, Mr. Hardman.

HAMBURGH (Pullets of any variety).—First, Mrs. Pettat. Second, Mrs. Hanco. Third, Mr. Lowe.
MALAY.—First, Mr. Rumsey. Second, Mr. Manfield. *Chickens*.—First, Mr. Sykes. Second, Mr. Rumsey.
MALAY (any other variety).—First, Lady Aylesford, Mr. Dawson, Mr. Reynolds, Mr. Lane, and Mr. Dixon. Second, Mr. Dawson.

SINGLE COCKS.

DORKING.—First, Lady Louisa Thynne. Second, Mr. Hill. Third, Dr. Hewson.
SPANISH.—First, Mr. Brundrit. Second, Mr. Wood. Third, Miss Rake.
COCHIN-CHINA.—First and Second, Mr. Tomlinson.
BRAHMA POOTRA.—First, Mr. Craigie. Second, Mr. Botham.
POLANDS.—First, Mr. Dixon. Second, Mrs. Pettat.
HAMBURGHS (Golden-pencilled).—First, Mr. Carter. Second, Mr. Worrall.
HAMBURGHS (Golden-spangled).—First, Mr. Worrall. Second, Mr. Carter.
HAMBURGHS (Silver-pencilled).—First, Mr. Martin. Second, Mr. Keable.
HAMBURGHS (Silver-spangled).—First, Mr. Robinson. Second, Mr. Beldon.
BANTAMS (Golden-laced).—First and Cup, Mr. Hill. Second, Mr. Punchard.
BANTAMS (Silver-laced).—First, Mr. Leno. Second, Mr. Bayley.
BANTAMS (White).—First, Mr. Marks. Second, Mr. Elkington.
BANTAMS (Black).—First, Mr. Stansfield. Second, Mr. Worrall.
BANTAMS (Any other variety).—First, Mr. Daft. Second, Mr. Peters.
GEESSE (White).—First, Mr. Daft. Second and Third, Mr. Manfield.
GEESSE (Grey and Mottled).—First and Cup, Mr. Fowler. Second, Mrs. F. Blair.
DUCKS (Aylesbury).—First, Cup and Third, Mrs. Seamons. Second, Mr. Fowler.
DUCKS (Rouen). First, Mr. Holmes. Second, Mr. Fowler. Third, Mr. Ashton.
DUCKS (Black East Indian).—First, Miss Beasley. Second, Miss Steele Perkins.
DUCKS (Any other variety).—First, Lady Paulett. Second, Mr. Bayley.
TURKEYS.—First and Cup, Mr. Smith. Second, Mrs. F. Blair. Third, Mr. Barker.
TURKEYS of 1860.—First, Mr. Smith. Second, Rev. T. Fellowes. Third, Mr. Smith.

GAME FOWLS.

BLACK-BREASTED REDS.—First, Captain Hornby. Second, Mr. Wood. Third, Mr. Richard Swift. *Chickens*.—First and Cup, Hon. Mr. Vernon. Second, Mrs. Hornby. Third, Mr. E. Archer.
BROWN AND OTHER REDS.—First, Master Moss, for the best pen of Game in the Exhibition. Second, Mr. E. Archer. Third, Mr. Dawson. *Chickens*.—First, Mrs. Moss. Second, Mr. Fletcher. Third, Mr. Smith.
BLACK AND BRASSY-WINGED.—First, Mrs. Dawson. Second, Mr. Munn. Third, Mr. Burman. *Chickens*.—First, Mr. Bullock. Second, Mr. Burgess. Third, Mr. Munn.
DUCKWINGS.—First and Cup, Mr. Doncaster. Second, Mr. Swift. Third, Mr. Dawson. *Chickens*.—First, Mr. Doncaster. Second, Mr. Munn. Third, Mr. Heape.
WHITES AND PILES.—First, Mr. J. Camm. Second, Mr. Foulkes. Third, Mr. Robinson. *Chickens*.—First, Mr. Robinson. Second, Mr. Clayton. Third, Miss Crawford.
HENS.—First, Mr. S. Swift. Second, Miss G. Moss. Third, Mr. E. Archer. *Pullets*.—First, Hon. G. Howard. Second, Mr. Swan. Third, Mr. E. Archer.
ANY OTHER VARIETY.—First, Mr. Douglas. Second, Mr. Dawson. Third, Mr. Robinson.
BLACK-BREASTED REDS.—First, Mr. Douglas. Second, Mr. Swift. Third, Mr. Archer.
BROWN AND OTHER REDS.—First and Third, Miss E. Moss. Second, Miss Cargie.

SWEEPSTAKES FOR SINGLE GAME COCKS.

First, Mr. Garton. Second, Captain Hornby. Third, Hon. W. W. Vernon. Fourth, Mr. E. Archer.

BLACK EAST INDIAN DUCKS.

I FEEL it is necessary that we should again urge upon Committees and Secretaries of Poultry Shows the necessity for giving a separate class for Black East Indian Ducks. Although at many Shows this is now done, there are still many which do not give this beautiful breed of Ducks the chance of competing at all. I have recently received prize lists of forthcoming Poultry Shows where they give classes for Aylesburys and Rouens, but none either for Black Ducks or "Ducks of other varieties," so that we Black-Duck breeders have to keep our birds at home and our entry money in our pockets.

Now, the best proof Committees can have of a class being necessary for these very beautiful birds is the way in which where it is given it fills. Take, for instance, the Crystal Palace Winter Show, 1859, where the Duck classes were as follows:—Aylesburys, 12 pens; Rouens, 21 pens; Black Ducks, 16 pens; other varieties, 12 pens. So, then, the Blacks exceeded the Aylesburys in the number of pens by four.

Take the same Show in January, 1860, when the entries were as follows—viz., Aylesbury, 11; Rouen, 14; Black Ducks, 11; other varieties, 9. So that in this instance the Black Ducks were the same as the Aylesburys in the number of pens. Or to take a more recent case—the late Devizes Show, where the entries were—Aylesburys, 7 pens; Rouens, 13 pens; Black Ducks, 12 pens; other varieties, 7 pens. Here the Blacks again exceeded the Aylesburys by five pens; and what Committees have to do, is to

support the classes which support them—and a Black-Duck class is generally well filled. I hope the day is not far distant when it will be no more excluded from the prize sheet than that for Aylesburys or Rouens, as, if they are not more useful they are much more ornamental, and there is no doubt but that Poultry Shows are for the encouragement of fancy rather than useful poultry, although, undoubtedly, they tend to the improvement of both.

Let the fancy breeds have their due; and when Calls, Mandarins, Carolinas, &c., number as well as East Indians do now, let them each have a class, but until then they must be content to compete in that for "other varieties," besides Aylesburys, Rouens, or Black East Indian. I have not sent to several Shows where I should have entered four or five pens in different classes, solely because there was no class for Black Ducks; and it is my intention to support those Shows which give them a chance of competing on a level with Aylesbury and Rouen, and withhold my support from those which do not, and would most earnestly intreat other Black-Duck breeders to do the same.

I am confident that many Shows lose as much by not giving this class as they could, if they liked, get by giving it, as they not only lose entries of this particular breed, but also of others; as I make a rule, and know some others do the same, that if there is no class in which Black Ducks can compete, not to show anything at all.—A BLACK-DUCK BREEDER.

CRYSTAL PALACE WINTER POULTRY SHOW.

THIS great annual Show of Poultry will be held at the Crystal Palace this year during the Cattle Show week, commencing on Wednesday, the 12th, and continuing until Saturday, the 15th December. The entries are very numerous, comprising nearly 1000 pens of poultry of all kinds, with Gold, Silver, and other varieties of Pheasants, nearly 400 pens of Pigeons, and 100 pens of Rabbits. A novel feature is added in the shape of a sweepstakes for Game Cocks, for which a large number of entries have been made.

The object of holding the Show this year at the same time as the Cattle Show, is to afford to agriculturists and others the opportunity of inspecting during a single visit to the metropolis the progress of the various breeds of poultry, as well as of cattle.

The north wing of the Palace, adjoining the tropical department, has been refitted with hot-water pipes for the purposes of the Show, so that, however inclement the weather may be, an agreeable resort will be open to the public. Combined with the Poultry Show there will be a great exhibition of Roots, to which many of the most celebrated agriculturists will contribute. These will be arranged in the centre transept of the Palace.

As the leading exhibitors at the Palace, who annually erect their stalls in the nave for the Christmas season, have received permission to commence their holdings by the time of the above Show, the Palace is likely to present an unusually gay and bustling appearance for this season of the year.

NORTHAMPTON AMATEUR POULTRY AND CANARY SHOW.

SEVERAL of the lovers of poultry in Northampton and its neighbourhood had long wished to get up a Show of poultry, but from various causes their attempts had been unsuccessful. However, on Thursday last (November 22nd), the first of what we hope will be the prelude to many more was held, and from the support it received we augur that its future success will be certain. There were about eighty pens of poultry, and nearly two hundred Canaries exhibited. The *Spanish* classes were represented by twelve pens, Mr. Wright, of Northampton carrying off the principal prizes. The cockerels in these classes were good, but the hens and pullets had unmistakeably red faces. These latter must be discarded in future. The *Dorking* class was very well filled. We expect Mr. Shaw's, of Hunsbury Hill, and the Rev. F. Thursby's, will be heard of again at Birmingham and the Crystal Palace. The *Cochins* were badly represented. Game had from twenty to thirty pens to sustain their reputation, and amongst the cocks were some excellent birds. To those conversant with *Canaries* there was every inducement to pay the Show a visit, every variety being well represented.

Mr. Wright, of Northampton, was Secretary, and by the indefatigable exertions of Mr. Jno. Shaw, of Hunsbury Hill, near Northampton, with Mr. Heusman and a working Committee,

the Show bids fair to be one of considerable importance. We would recommend the New Corn Exchange as the locality, and that the Show be held for chickens only; that the time should be about the end of October, not to clash with Worcester; and that some plate should be awarded for leading classes, and, above all things, that collection cups should be avoided.

Mr. J. K. Fowler, of the Prebendal Farm, Aylesbury, officiated as Judge of the poultry. The following is the prize list:—

SPANISH.—First and Second, Mr. Wright, Northampton. Highly Commended, Mr. Shaw, Hunsbury Hill.

DORKINGS.—First, Rev. F. Thursby. Second, Mr. Jno. Shaw. *Chickens*. First, Mrs. Jno. Shaw. Second, Rev. F. Thursby.

COCHINS.—First, Mr. Knight. Second, Rev. F. Thursby.

GAME (any colour).—First and Second, Mr. Wright, Northampton. *Chickens*.—First, Mr. Page. Second, Mr. Boraston.

GAME SINGLE COCKS.—First, Mr. Wright. Second, Mr. Chamberlain. Third, Mr. Page.

BRAHMAS.—Prize, Rev. F. Thursby.

HAMBURGS.—First, Mr. Arlington. Second, Mr. Sharp. Third, Mr. Fitzhugh.

POLISH.—Prize, Mr. Taylor.

BANTAMS.—First, Mr. Wright. Second, Mr. Lillyman.

GAME BANTAMS.—First, Mr. Shield. Second, Mr. Heusman.

DUCKS.—First, Mr. Shaw, Hunsbury Hill (Aylesbury). Second, Mr. Heusman (Wild). Third, Mr. Barratt (Wild).

ANY OTHER VARIETY OF FOWLS.—First and Second, Sir C. Wake, Bart.

RABBITS IN MINIATURE WARREN.

I HAVE a large piece of waste ground, about six or seven acres, unfit for cultivation, there being no depth of soil, yet there is plenty of herbage on it. From the articles lately appearing in your paper, it occurred to me that it would be a good investment to convert it into a miniature warren. Being surrounded by my own property it would be secure from poachers, and all around being grass land they could not injure crops. I am given to understand, by an old keeper, the skins of Chinchilla Rabbits have been worth as much as 25s. to 35s. per doz., and the Himalayas a great deal more.

Which kind would you recommend me to turn off? and are the skins as valuable as stated to me? I suppose March would be time enough to get them, or will they breed through winter? —AN OLD SUBSCRIBER.

[I have no doubt your waste ground might be converted into a warren, and if well managed return a good per centage. A great deal depends upon the skill of the warrener in getting his skins the right colour, which should be medium between light and dark. The value of the skins depends upon the time of year they are taken off, and if free from stains, &c., are worth from 18s. to 30s. per doz. Either the Chinchilla, Silver Grey, or Himalayas will do. Turn them out at any time.—R. S. S.]

RABBIT-KEEPING.

I WANT to carry out the suggestions of your correspondent by keeping Rabbits in a pit instead of in hutches, but cannot understand how it is to be done. My ground is clay, and the part I thought of appropriating is a sloping bank, something like one side of a railway cutting. As soon as I dig an open pit the water (as with all pits however situated), will drain into it, and the rains will fall into it; and if I erect a summer-house upon it, as suggested, either the Rabbits will be covered over by the floor of it, or the summer-house will have no bottom. It is also said that the plan of the pit saves the trouble of cleaning out. How can that be? If I keep on throwing litter and things to the Rabbits, these and their dung will quickly accumulate.—A. C., *Hampstead*.

[Taking into consideration your soil and situation, I should advise you a paved court, unless you turn the whole of your ground into a warren. A large stock may be kept in the following manner:—Keep the breeding does in hutches, and turn the young ones when weaned into the court, which you can make any size your convenience will allow. The bottom should be paved with twelve-inch flat tiles, or old bricks, and a coating of Portland cement about half an inch thick, with a gentle fall to carry off urine or rain. The sides should be boarded about three feet high, and galvanised netting a yard wide, 2½-mesh, and covered with the same to prevent cats getting in. There must be a projecting roof from the back about five feet, and about four feet from the ground. Under this roof should be filled up with earth, clay, and sand, in which the Rabbits will burrow freely, and afford them protection from cold and wet. Their feeding-troughs should also be protected from wet, and especially

the green food. The breeding does may be turned out in the court and taken up three or four days before their time of kindling; and, in the first place, it would be better than to turn out the very young ones first, as they would make the burrows for the young. A large quantity might be bred by keeping about a dozen does and a buck. The does either in hutches, or in the court, and the buck must always be kept a prisoner. The Chinchilla or Silver Greys, and Himalayas, are, perhaps, the best on account of the demand and ready sale for them.—R. S. S.]

APIARIAN NOTES.—No. X.

BEE-FEEDING AND ITS EFFECTS.—Having been solicited in your No. 634, at the close of your answers to "A YOUNG BEE-KEEPER," to give you the results of my experience in the feeding of bees, I feel bound to respond to the appeal, though fearing that there is little probability of my being able to contribute anything new on the subject. It will, however, be a source of considerable gratification, if I shall be enabled to render any assistance to others interested in the management of our little favourites.

At the commencement of my career as a bee-keeper, having eagerly devoured all the treatises on apiarian subjects with which I could meet, I came to the conclusion that feeding could not be too largely carried on. Accordingly, numerous were the feeders of every kind which I manufactured, consisting of fountains, float-feeders, and others. The food itself was the nasty mess of ale and sugar—sometimes consumed, but as frequently left almost untouched. Occasionally considerable quantities were taken down and stored, generally to be followed in the early spring by fermentation in the cells, attended by loss of bees and hives from dysentery, from being clogged by the sweating of the food, or from disgust at the state of affairs within. For many years, beer as an ingredient in the composition of food has been totally discarded in my apiary. Sugar, either brown or white, boiled to a syrup, with a considerable dash of honey added, and stirred in while yet warm, has been substituted. The proportions given in the answers to correspondents, in the pages of *THE COTTAGE GARDENER*, are very good—viz., 6 lbs. of sugar to 4 lbs. of water, boiled for three or four minutes. To this I always add from 1 lb. to 2 lbs. of good sound honey, although it is by no means necessary to do so. A little salt is also by some believed to be an advantage, and I am inclined to think more especially for spring feeding.

As to the kind of feeder to be recommended, there has been none with which I have been so much pleased as the bottle lately described by "THE DEVONSHIRE BEE-KEEPER," with the net stretched over the mouth. It can be used with any kind of hive. For flat-topped boxes, a loose block must be made sufficiently thick, wide, and heavy to prevent the overturn of the bottle, having a hole into which the neck fits sufficiently tight, on one side of which (that next the hive), a piece of perforated zinc is nailed. For round-crowned straw hives, a small hole about the size of the neck of the bottle may be cut out, into which the neck is thrust, resting any way on the combs. A cork will close the aperture when done with.

For autumnal feeding I have used large-sized wine bottles, choosing those of clear glass, and with as thin a lip as possible. For spring use, a smaller bottle holding a few ounces only would, probably, be preferable.

I have in a previous communication expressed my belief that bees will live and do well with a smaller amount of food in their combs than is commonly believed. Having frequently weighed hives in September, and again early in March, I have found the food consumed to have been from 4½ lbs. up to 7½ lbs.: therefore, if I find any hive to weigh from 8 lbs. to 10 lbs. above the weight of bees and comb I do not feed it in autumn at all, preferring to supply them with small quantities from time to time in spring, after pollen-gathering has commenced. I have almost invariably remarked that such hives, provided they are not deficient in population, prove the most profitable either in the way of swarms or in the honey produce the succeeding season. On the other hand, a hive heavily stored with sealed honey will frequently completely disappoint the expectations of the owner. Whether it is that the bees do not equally feel the necessity for exertion, or that the queen is cramped for room to deposit her eggs, I cannot say; but am convinced that it is by no means advisable to leave the stocks too heavily provisioned for the winter. In talking with cottagers, how frequently have I been

shown a strong vigorous stock which has either thrown off a swarm or is about to do so, and which they said was left on the stand to die, having been so light the preceding autumn as to be not worth the trouble of killing. For many years I hardly gave a pound of food in autumn, although careful to see that no hive really required it. When necessary, it generally proved to be certain stocks from which supers had been taken, the bees having stored all the accumulations of the summer's labours in the upper boxes. But my readers will not need the information that this past season has been a most exceptional one as regards the necessity for feeding, and that most liberally. I have given my hives about 140 lbs. of food, of which amount nearly one-half consisted of honey. Probably the aggregate of the increase in the weight of the eleven hives I was obliged to feed, at the conclusion of the task was under one-half. In some hives considerable breeding was induced, and in the case of swarms of the current season much new comb and elongation of the cells were carried on—in either instance drawing largely on the supplies afforded. I was enabled to watch one colony narrowly, owing to its being suspended from a Salter's balance or scales, and will give the results, as they are interesting and instructive. No account was kept of the exact quantity of food supplied to this stock; but I am certain it must have been over 50 lbs. altogether in the two periods at which feeding was carried on.

On May 30th the swarm was hived in the box, the whole weight showing exactly 20 lbs. on being first suspended from the scales. They were fed nearly every day up to June 10th without any increase in weight, a considerable quantity of comb being made. On this date a second swarm was added, which increased the weight to 22½ lbs. Food being still supplied, the register stood as under:—

June 10th, weight 22 lbs. 4 ozs. (gross weights).

| | Weight | lbs. oz. | | Weight | lbs. oz. |
|---------------|--------|----------|---------------|---------|----------|
| June 11 | Weight | (24 8 | July 19 | Weight | (32 0 |
| " 14 | " | (25 0 | " 25 | Not fed | (31 8 |
| July 3 | " | (27 0 | " 27 | " | (32 8 |
| " 7 | " | (30 0 | " 30 | Fed | (32 0 |
| " 10 | Fed | (31 8 | Aug. 3 | " | (33 8 |
| " 13 | " | (32 8 | " 22 | Fed | (31 0 |
| " 14 | " | (33 12 | Sep. 30 | Fed | (40 0 |

But little food was given from the middle of July until the 22nd of August, when I again resumed feeding, and that much more liberally than before, supplying them with many pounds at a time. The result of which was, that on lifting out the bars of comb late in September, I found most of them crammed with sealed brood and larvæ in all stages. The feeding was continued until (on the 30th of September), the hive turned the scale at 40 lbs., at which I was well content to leave it. Fifteen days after it exhibited a loss of 5 lbs. 8 ozs., the index standing at 34 lbs. 8 ozs. I could only account for this, by presuming that fully-developed bees weigh much less than in the larva state, and that all the young were now hatched out. There were a few drones also at the previous date, which might have been all turned adrift. The above observations proved the immense quantity of food which is necessary for the construction of combs, and for the use of the brood. At the present time the weight stands at 33½ lbs., showing a decrease of only a pound in more than five weeks from the time all supplies were stopped; but a total increase of 13½ lbs. only since the box was first tenanted. About 20 lbs. may have been given up to the 17th July, when on inspection I found the box to be full of combs. The second grand feeding of about 30 lbs. in amount, was employed in rearing a great quantity of brood, in elongating, filling, and sealing the cells. Yet, nevertheless, the weight stands the same now as it did on the 3rd of August.

The result of my experience with respect to feeding is this, that I prefer dispensing with autumnal feeding in every case where there seems to be a fair probability of the natural supply lasting until the end of February. Then, on no account to neglect giving small quantities judiciously from time to time. My success in honey-getting has been much greater since the adoption of this plan to what it was when I used to feed more profusely. My usual course has been to weigh all my hives in October, feed those that really require it, or join the bees to better-supplied stocks; make them all snug and secure in their winter casings, and not touch or hardly look at them until February, when I eagerly watch for the first signs of pollen-gathering in each hive, which in this district I generally find to be about the 14th of that month. All moisture-condensers have been long ago discarded from my apiary, believing them to be worse than useless—absolutely injurious. No sufficiently

strong colony will suffer from internal moisture, either in boxes or in straw hives, provided they are perfectly protected from external dampness. When I first established an apiary, and paid great attention to feeding, and duly supplied my best stocks with condensers, year after year I had to lament the unaccountable frustration of my dearest apiarian hopes. From this remark I do not wish to be supposed an enemy to feeding. I am opposed to feeding hives in autumn, unless they really require it, or bid fair to do so before the spring. The food formerly used was, as I stated before, the mixture of beer and sugar, which frequently proved very injurious to the hives from its liability to fermentation.

It may be laid down as a fixed rule, that for autumnal feeding the requisite quantity should be afforded as quickly as possible. If large feeding-pans are used, it is better to fill them only at night. If the bottle system is adopted, day or night is immaterial, as there is no excitement. If, when fed, bees become excited, numbers leave the hive gorged with food, which they eject in "a clear stream of fluid." Many years since, Mr. G. Fox, of Kingsbridge, instituted certain experiments in feeding a hive which was attached to a spring scale. He supplied honey and sugar syrup—first, to the amount of 16 ozs., in very small quantities, in a small, shallow feeder. When all was given the weight had increased 1 oz. only. Again, he gave to the same bees 16 ozs. in a large feeder at once, and the gain in weight was 15 ozs. In the first case there was considerable excitement; in the last there was none. His experiments were carried further than this, but the above is sufficient for our purpose.

The spring of 1851 was a very trying one for bees in this part of England. Some of the hives of the above-named gentleman absolutely refused to take down the food from the ordinary feeders. He placed in a small box, having a two-inch aperture in the bottom, a good-sized piece of the crumb of a brown-loaf, which he saturated with honey and sugar syrup. With this he succeeded in keeping his bees alive, occasionally adding a little to the already saturated cake. Did it supply the place of pollen in the same manner as flour was supposed to do, by some who advocated its use in the pages of this journal early this last season? The plan of placing a "soaked cake" under the hives, is common in some parts of the country, and the bees are said to consume it; certain it is that a great deal of it disappears.

The subject of feeding is one of great interest, and is by no means exhausted, but enough has been written for the contents of one paper. I hope we shall have the experience of others as well as that of—S. B. Fox, *Exeter*.

OUR LETTER BOX.

REARING CHICKENS (*A Young Amateur*).—Whether for exhibition or for table use they require the same treatment. If you enclose seven postage stamps with your direction, ordering "The Poultry Book for the Many" to be sent you, you will find in that ample and excellent directions that will exactly supply what you require.

PULLETS LAYING (*A Constant Subscriber*).—The time when White Game and Dorking pullets may be expected to lay depends upon the season of the year at which they become six months old. If this happens in the spring or summer they ought to lay then, but if they attain that age late in the year they will probably not lay until the spring following.

COLOUR OF GAME FOWLS' LEGS (*T. V.*).—Mr. Whitwell is perfectly right. There is no fixed colour for the legs of Game fowls; and it is a matter of taste or of opinion, which differs constantly. In most cases the yellow legs are preferred before white legs.

TEACHING TUNES TO BIRDS—**REARING YOUNG ONES** (*A Young Amateur*).—I am not aware that Goldfinches have been taught to whistle. Linnets have but rarely. Jays sometimes whistle part of an air. Young Starlings may be brought up on sopped bread and egg, or any fresh meat cooked or raw, and on ground oats mixed with milk. Bullfinches on sopped bread, egg, and maw seed. Hen birds rarely whistle well. Young birds should be taken from the nest when about half fledged, they cannot be too forward as long as they will open their mouths. The larger the breeding-cage the better. Prices vary from 2s. upwards; neat ones can be bought in London for 3s. 6d. Pair the birds in spring at their natural times. Cowhair well cleaned with moss is good for nest-building.—B. P. BRENT.

PIGEONS AND FOWLS FOR TABLE USE (*An Old Subscriber*).—If it is wished to keep Pigeons for the table only, and without reference to fancy, the common Blue Roc is the best. It is prolific, very hardy, and inexpensive. It can be had at Bailey's, 113, Mount Street, London. The Dorking is unquestionably the best fowl for the table; and there is no better layer than the Spanish in the proper season. We think Brahmas and Cochins are the best winter layers. The Grey Dorkings are much harder than the White; they also fatten better for table purposes. It must be recollected no hens lay in the winter, and there is no breed possessing that quality. It is a thing of age and not race.

MIXING PIGEONS (*Once a School-boy*).—It is not advisable to keep Pigeons of a great disparity of size together. Trumpeters are a stay-at-home, prolific variety. For a country amateur, who wishes his birds to procure a part of their own living, I advise some of the clean-footed Toys. So much depends on taste, that it is almost impossible to advise which is the best variety to keep. "ONCE A SCHOOL-BOY" had better read "The Pigeon-Book for the Many," and make his own choice.—B. P. BRENT.

WEEKLY CALENDAR.

| Day of M'nth | Day of Week. | DEC. 11—17, 1860. | WEATHER NEAR LONDON IN 1859. | | | | Sun Rises. | Sun Sets. | Moon Rises and Sets | Moon's Age. | Clock afterSun | Day of Year. |
|--------------|--------------|------------------------------|------------------------------|-----------|-------|-----------------|------------|-----------|---------------------|-------------|----------------|--------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | |
| | | | | deg. deg. | | | m. h. | m. h. | m. h. | | m. s. | |
| 11 | Tu | Grosbeak comes. | 30.577—30.449 | 34—26 | E. | — | 59 af 7 | 49 af 3 | 6 7 | 28 | 6 18 | 346 |
| 12 | W | Red-throated diver comes. | 30.396—30.328 | 40—29 | S. W. | ·01 | VIII. | 49 3 | sets. | ● | 5 50 | 347 |
| 13 | Th | Tufted pocher comes. | 30.291—30.065 | 39—22 | W. | — | 0 8 | 49 3 | 34 4 | 1 | 5 22 | 348 |
| 14 | F | Greenfinches congregate. | 29.968—29.893 | 31—22 | N. | — | 1 8 | 49 3 | 48 5 | 2 | 4 53 | 349 |
| 15 | S | Chaffinches congregate. | 29.956—29.804 | 34—14 | N. | — | 2 8 | 49 3 | 6 7 | 3 | 4 33 | 350 |
| 16 | SUN | 3 SUNDAY IN ADVENT. | 29.689—29.609 | 34—14 | N. | — | 3 8 | 49 3 | 21 8 | 4 | 3 54 | 351 |
| 17 | M | Grey-headed goosander comes. | 29.655—29.651 | 28—18 | N. | — | 4 8 | 49 3 | 32 9 | 5 | 3 24 | 352 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 46.1° and 34° respectively. The greatest heat, 61°, occurred on the 13th, in 1842; and the lowest cold, 7°, on the 16th, in 1853. During the period 135 days were fine, and on 96 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

PROCEED with former directions as regards manuring and trenching. *Asparagus*, the most convenient plan of forcing it is to take the roots up carefully, and to place them in a frame or pit provided with a very gentle bottom heat, and covered with light soil. *Celery*, take advantage of any favourable opportunity, till frost occurs, of earthing up the late crops, both for protection and blanching. *Lettuce*, those in frames to be kept dry, and free from dead leaves. *Sea-kale*, the best-flavoured dishes are obtained from established plants subjected to no system of forcing, but merely covered with light soil, and brought forward by the natural warmth of the season. But where it is required earlier, the old plan of covering with pots, and supplying a stimulating heat with a body of leaves and dung is still preferred by many. The more modern system of taking up the roots, and forcing them in any dark place is adopted where there is the convenience, as being more economical of labour and quick of production. The exclusion of light is indispensable for the production of the proper flavour. *Turnips*, on the first appearance of severe frost it is advisable to get some under cover; they may be laid in sand after the tops are cut off. Keep the Broccoli free from dead leaves, as after frost they generally injure the plants by causing them to rot. Where coal ashes are abundant they may be used with advantage for the back or narrow walks, as they bear the winter traffic well, and are always pleasant to walk upon.

FRUIT GARDEN.

The planting of fruit trees, if wanted, should be attended to immediately. The roots of all newly-planted trees to be protected from the effects of severe weather by mulching. In the absence of frost all walls may be pointed and limewashed.

FLOWER GARDEN.

The plants of a tender character in the borders to have some litter, sawdust, old tan, or coal ashes spread pretty thickly over the roots, and a few spruce fir or furze branches stuck round them. Flower-borders to receive a good top dressing with old leaf mould, or any other light, rich compost; to be forked in, and the surface of the borders to be left quite rough, that being ameliorated and pulverised by the frosts of winter it will be in a more healthy state for spring operations.

STOVE.

A cautious application of fire heat to be still observed here. Do not allow the temperature to rise above 55° at night for fear of exciting a premature growth; the use of the watering-pot to be judiciously attended to. A small portion of air to be admitted on mild days, to assist in purifying the atmosphere of the house. Any of the plants with large fleshy roots, such as the different varieties of *Ipomœas*, to be allowed to grow nearly or quite dry.

GREENHOUSE AND CONSERVATORY.

The great object now should be to avoid the ill effects of humidity and stagnant air, and at the same time to be cautious that the application of heat is not so great or so injudiciously applied at night as to excite plants into a drawn and unhealthy state: therefore, it is advisable, wherever it can conveniently be done, to apply night covers, and by that means dispensing in a great measure with the use of night fires. The leaves of *Camellias*, *Oranges*, &c., are liable to a dark scum, which should be cleaned away by a sponge, as a great portion of the interest among pot plants depends on their healthy condition and on cleanliness both with regard to the leaves and the pots.

FORCING-PIT.

This structure should now be kept fully occupied with a batch of the different plants as previously advised, and which are usually employed in forcing for the decoration of the conservatory or drawing-room.

PITS AND FRAMES.

If former instructions have been carried out, the plants in these structures will present a dwarf and robust appearance, thus being well fitted to bear deprivation of light for some time if severe weather should ensue. Damp has accumulated very much of late, owing to the heavy rains and dense fogs with which we have been visited. This may be removed by giving air at the front and back on fine days; but where the pits are heated by flues a dry atmosphere can be obtained by putting on slight fires in the day, at the same time allowing a free circulation of air amongst the plants. W. KEANE.

SOWING CYCLAMEN SEED.

WINTERING CHRYSANTHEMUMS—SEWAGE FOR VINES—CHRYSANTHEMUM CUTTINGS.

BUT was there nothing to be seen worth mentioning in your eastern travels, from the rich valleys of Dan, where you had seen that leafless forest, to the upland moors of Beersheba, where you say the luxuriant foliage covered down to the edges of pottery, except that reflex of Chinese gardening in the matter of *Chrysanthemums*, and the English short-hand method of modelling their flowers into unseemly bulk and proportions? Well, what if there was or were? Is a traveller justified in telling family secrets more than others? But if you or they want things to pay their cost, you must visit the east of London; and to prepare you for it, let us look at the experiment of 1859, on the early coming of *Cyclamens* from seeds the same month and season.

You will recollect it was to gather the berries or seed-pods of different *Cyclamens* a month before they were so ripe as to part naturally from the stalks, and to sow them in their own clammy pulp the same day—the work of sowing the berries, after being bruised to let go the seeds, being very much like spreading jam over bread and butter to reward good conduct. The pots then—the

beginning of June, being plunged in the open ground up to the rim, and a larger pot turned over them and pressed a little into the earth to keep off intruders. If the bottom of the top pot had been knocked out and a piece of glass had been set on it instead, that would have been the best contrivance I know of for very many things, and for cuttings from June to September. But so it was; and the seedling *Cyclamens* began to break ground by the beginning of August—last August twelvemonth, and they have been green and growing ever since to the entire satisfaction of the man who did them that way for the first time. He repeated the same experiment, or I did it for him, last June with seeds of *Atkinsii*, and they were up in just four weeks; but being six weeks under the pot-cover before they were looked at, they were drawn up very spindly, and they may have sprouted in less than four weeks, but at present they are all on their right legs.

Now read Mr. Bird's way of doing them, I mean the great *Chrysanthemum* grower at Stoke Newington. But first of all let me say that I calculated his stock of *Cyclamens* to amount to fifty thousand plants, of which twenty thousand are one-year-old, or rather six-months-old seedlings, twenty thousand from the crop of 1859, and ten thousand ready for sale, all in fours, in 48 and 32-sized pots—that is, at the age of two years, or this first potting off from the seed-pans in pots four medium bulbs in a No. 48-pot; and all the roots above mediums he puts into No. 32-pots, and also four in each pot, and he sells them all on the wholesale principle at so much a thousand. But you or I shall never know his price for a thousand of these most bewitching flowers; for he sells them all to the trade, and what the trade leaves on his hands go to Covent Garden Market at the current price of that same season. I had to beg my way to be allowed to make known these statistics, but Mr. Bird acknowledged that his customers, a certain number of nurserymen, were liberal men, and had no interest "in keeping any mortal thing a secret."

Now, his way of raising *Cyclamens* beats my way all to brickdust. He, too, knows and did act on the philosophy of the thing for ever so long, about the bread-and-butter-and-jam-over-all way of sowing the seeds, to gain a year over the old school.

Instead of the inverted pot over a seed-pot plunged in the ground for four summer months, he places his seed-pans at once in heat, and on bottom heat, if you can call so a spent hotbed, and he has his persicums all up in one month—just at less than one-half the time mine took, and in proportion they are now so much better and finer plants than my seedlings. Then you may book Mr. Bird's plan as the best to pay, and mine as the next best to pay in a very different way—pay for the pleasure of doing a thing ten times better than ever it was done before, at neither cost nor trouble at all.

But before I leave Dan for Beersheba, allow me to say that I discovered another thing to pay in a way I did not at all think of. I found lots of some different kinds of *Chrysanthemums* in a forcing-house; and although the fog was a yard thick, and no sun in the three kingdoms, the glass stood just at 75° of heat—10° too hot at the time for a fox's brush, *Ærides*, or *Saccolabium*, or anything else from the jungles of India; and yet these very *Chrysanthemums* seemed to be just in their element, and in a few days were to take the shine out of foreign or domestic travellers, whether from here to Mesopotamia or to Middlesex, at the incoming competitions at Stoke Newington. How and why that was is thus to be accounted for.

No matter how the seasons go, or at what time of the month a show is proclaimed, if one has the practical knowledge that he can force his flowers up to the very day, they must show more freshness and prime beauty than if they had to stand in a cold back shed for ten days to keep them back to meet a show which must be

held ten days after they were out of prime. The sorts which were in this strong heat of 75° were lots of *Plutus*, of *Yellow Perfection*, of *Aregina*, and of *Nonpareil*. But there are a few others with hard centres which will stand a considerable degree of heat to get them to open and expand finely. *Golden Lotus* is one of these; and in December will need some extra heat to bring it up to the mark.

For two long vineries with young Vines of Black Hamburgh the borders were all made on the surface of the natural soil, the place being too low to allow of a level border in the usual way. A sewage stream ran at a short distance from the Vine-border only a few inches below the natural level of the ground, and a "drip" drain, or a shallow cutting, at the front of the Vine-borders led into the open sewer. The borders were not more than eight feet wide, and stood at a sharp angle against the front wall of the vineries, and will be widened by degrees as the roots occupy the whole of what is now laid for them. This mode of giving an annual, or a biennial, or a triennial assistance to the roots of Vines is one of the best practices of the present day. It was first recommended by Mr. Ayres some years since, and is fast extending. I also saw the plan was adopted in the garden of Sir Joseph Paxton this autumn.

The last practical move I had seen at the Frampton Park Nursery of Mr. Holmes was the manner he winters his stools of *Chrysanthemums*, in order to get a sure crop of cuttings from the best suckers early in the new year, and before the great battle for striking the bedding plants commences in the spring. He had a bed of light rich soil made over a hot-water tank in a long run of deep pits, and here he planted the balls in rows across, six inches apart, and the balls only three or four inches from one another. The balls were well watered before planting, and very little more will they need till he lets heat into the tank in January, if the suckers do not come up fast enough for his purpose. A very slight degree of top or bottom heat suffices for the purpose. The propagation of this important branch is got through before the rest of the spring work begins, and a stock of good, sound, valuable stuff is thus obtained at little trouble or cost.

None of these great growers of *Chrysanthemums* take cuttings from the grown plants unless it be some rare and very scarce sort which is likely to be much in request; and no matter how early in the year the cuttings are rooted, provided the young plants are kept quite cool all through the spring. But for private use the middle of April is considered sufficiently early for making such cuttings, and the best cuttings then for making specimen plants with are the best top suckers from the balls, with a couple of inches at the bottom of each, with ready-made roots to them from the balls; to put each in a 60-pot, and to allow it to form a cramped ball of roots before any of the eyes can break, or the leading bud rises a joint from its first length. All this requires the plants to be kept as cool and aired as possible up to the middle of May, or even later; then to one-shift the whole of them into the blooming-pots at once, to have the pots exceedingly well drained, to give them nothing but soft pond or rain water till the flower-buds are seen, and never to stop a single shoot the whole season, but to keep leaders or stronger shoots in check by merely bending their points till the rest are up with them, and to have an eye on all side shoots, so as to nip them off as soon as you can pinch them, unless it be in June, when one of them here and there may be required to fill out the shape of the plant. That is the essence of the present practice of the best practical managers.

On the other hand, Mr. Bird assured me that all that has been said and done about striking those sucker shoots in the autumn and very early in the spring was "mere bosh." There is yet a deep-rooted philosophy in the bending of shoots which you have not yet heard of, and it is this:—When you are bent on taking a first-

class prize by hook or by crook with model cut flowers without dressing, success is to be effected really by the hook or crook, and by no other means. No shoots are trained to get model flowers from; they all stand upright—that difficult point which brings a volunteer on to the centre of gravity, and makes a soldier of a bumpkin. The flower stands upright also at the top of the shoot, and the florets of incurved flowers incline upwards to the centre of the flower from all the sides, but the weight of the florets themselves, the force of the wind against them, and the light of the sun when they get the chance, all conspire to rattle and confuse your model. But now take the hook or the crook, and with it bend down the top of the shoot until the centre of the then full-blown flower is turned right upside down: then the weight of the florets presses them close to the right position downwards to the very eye of the flower, the wind shuffles them better into their respective positions, and the glare of the sun will not attract them to widen their distances apart—and the play of the sun's rays being thus kept from their natural upper surfaces, the flower lasts ten days longer than it would do in its natural position, and it cuts from the stalk as no dresser could shape it.

I shall conclude by asking a Christmas-box [from each of the great dons—from Mr. Salter, from Mr. Bird, and from Mr. Holmes—that is, each of them to give us, for Christmas, the names of twelve of the very best-looking Chrysanthemums which are naturally the latest in coming into bloom, of which the old Two-coloured Incurved and Fortune's Two-coloured Incurved are the key-notes.

D. BEATON.

HOLLY DESTROYED BY CATERPILLARS.

My attention was directed to a healthy young standard Holly three feet or four feet high, that seemed to have been broken off by force. Upon a closer inspection I found that the tree had been actually eaten for the space of four or five inches long, and in diameter nearly one-fourth of an inch. The insect which committed the damage presents a larva-like appearance, and exceeds an inch in length. It is of a yellow colour, with black spots running in lines from the head to the tail, and its head covered with a hard horny substance. Beneath this horny substance is situated the mouth, the antennæ, and its biting apparatus (a pair of strong horny jaws). I am given to understand that there have been several of these destructive Caterpillars found in the grounds of the Crystal Palace this season.—G. W. H., Sutton, Surrey.

[The insect described in the preceding note is the Caterpillar of the Wood Leopard Moth (*Zeuzera æsculi*). It generally attacks young fruit trees. We have not heard before of its selecting the Holly.—W.]

LONDON PRIDE AND OTHER SAXIFRAGES.

WHEN a boy my little garden was considered incomplete without a plant of London Pride (*Saxifraga umbrosa*), and now it is a favourite with me, and is still the ornament of the cottage-garden border, where it has the preference before many a bedding favourite. It is seen in the greatest perfection in gardens attached to mountain homes. It there clings close to the earth and is beautiful. The variegated variety is not common in towns on account of the smoke; but in a clear atmosphere is a good plant for the garden, yet it has a fault in not retaining its variegation. Where it is liable to run out it becomes no better than the common variety, yet in some situations it will do very well. There is another variety of the variegated form with leaves much larger than the preceding, the variegation is more marked, of a pure white, and, I am informed, it will retain its character in all seasons. This plant I have not grown, but can assure your readers that it is a plant well worthy of a place in the mixed border, and I have no doubt will be used as an edging plant. Those readers of THE COTTAGE GARDENER who grow this plant ought to try it as an edging and report the result.

The *S. geum* (Kidney-leaved Mountain Saxifrage), will grow

in smoky situations, and ought to be cultivated by those who grow *S. umbrosa*, as it will furnish a good variety. In a damp situation, with a little shade from trees, it grows to a large size and the flowers are more attractive. The above plants are easily increased by division. I am aware these common Saxifrages are little noticed by gardeners; but the amateur and the curious keep them in their collections of hardy plants.

Will some one of the correspondents of THE COTTAGE GARDENER who resides in Teesdale, have the kindness to tell us if the following Saxifrages grow with them now, or are they eradicated—*S. hirculus*, *aizoides*, *granulata*, *tridactylites*, *hypnoides*, and *stellaris*?—RUSTIC ROBIN.

STOVE ORCHIDS.

(Continued from page 92.)

TERRESTRIAL SPECIES.

POTTING.—The earth-growing stove Orchids are found mostly in thickets and open glades of forests in tropical regions, growing in a continually increasing decomposing vegetable soil, rich, unctuous and moist. In order to succeed well we must imitate this soil. I can give an instance of successful culture of one of the most beautiful of terrestrial Orchids, I mean *Calanthe vestita*, which I saw in the stove at Summerfield, H. Micholls, Esq., near Manchester. This successful hit was achieved by Mr. T. Baines, the gardener there, a most zealous and persevering cultivator of Orchids. He grows this species in a rich, strong compost of fibrous lumps of loam, leaf mould not too much decayed, and flakes of dried, cakey cowdung, the whole mixed with small pieces of charcoal. He selects the strongest and nearly equal-sized pseudo-bulbs, eight or ten in number, when they are starting to grow, and plants them in his compost in a large pot, just covering the lower part of the bulbs. Very great was the success that attended this mode. They grew strong and flowered magnificently. The pseudo-bulbs were the largest I ever saw. The same method has been adopted for several years with the same success. The small tubers are potted in small pots and grown on till they are large enough to be put into a large pot to form a good specimen. There are several species that may be grown in the same way and in the same compost, but others will not bear so rich a compost. *Cypripediums*, for instance, thrive better in fibrous peat and leaf mould mixed with sand and charcoal.

In potting there is this difference between epiphytal and terrestrial Orchids—whilst the first thrive best if raised on a small hillock in the centre of the pot, the latter should be potted like other plants, level or just below the rim of the pot. The same season for this work, however, is suitable for terrestrials—namely, the spring of the year, and also the same attention is requisite in having the fresh pots clean, and draining well, and in cleaning the leaves of such as are evergreen. In the grouped list below, the different composts for each genus are described. To that list I refer the reader.

BASKETING.—A considerable number of epiphytal, and a few terrestrial Orchids, require to be grown in baskets, inasmuch as they have the peculiarity of sending their flower-stems almost perpendicularly downwards, showing evidently that they either grow on branches of trees or in crevices of rocks. If such are grown in pots, it is evident that the flower-stem growing downwards and being confined amongst the soil in the pot must rot, and thus render the care and attention of the cultivator, so far as the blooms are concerned, abortive. To prevent this misfortune, the attentive growers long ago adopted baskets, or placed the plants that had this peculiar habit in piled-up square pieces of peat, through which some of the flower-stems pushed and flowered well. I once had a large plant of *Stanhopea oculata* so grown, which produced no less than seventeen long flower-stems, with from six to seven large flowers on each. This plant happened to bloom when there was an exhibition in the Botanic Gardens at Liverpool. I took it there and was awarded the first prize for it. Notwithstanding this success, I do not recommend the growing of Stanhopeas in pots; because in such a case the water runs off the hillock, and, consequently, does not feed the plant sufficiently to keep it strong continually.

The way to put these peculiar plants in baskets, and to renew the soil and basket as they require it, is as follows:—Having the baskets ready made of different sizes, then fix upon one of a suitable size in proportion to the size of the plant, and line the bottom

and sides with a thin layer of long moss—sphagnum unchopped is the best. This moss is to prevent the compost from dropping through the bars of the basket, and also to keep in moisture. Upon the moss place a layer of the compost; after that take the plant out of the old basket or pot and examine the roots and leaves, cutting off all the dead ones from the former, and cleansing the latter from dirt and insects; also, removing as much of the old compost as you can without injuring the roots. Perhaps this old compost may be in lumps dry and hard, and the living roots are so firmly attached to them that to remove them from the lumps in that state would simply be impossible without breaking, and, consequently, destroying them. In such a case place the ball in warm water for a sufficient time to thoroughly soak through and soften the clods, then set the plant to dry, and when in the right state the old lumps may be removed easily enough from amongst the roots without injuring or breaking them. Having accomplished this point, then place the plant in the centre of the basket and fill in the compost all round it till the basket is full, keeping the pseudo-bulbs clear above the soil. That being done, then place the basket with the plant in it on a large pot, take the syringe with the coarsest rose fixed on it, fill the syringe with tepid water, and, holding the end pretty close to the soil, force the water strongly through the rose on to the soil, going round the basket all the while. This watering in this manner will settle the compost effectually, and will leave the surface smooth and even. Then with a pair of scissors trim off any loose pieces of moss that may have protruded through the bottom or sides. This gives a neat finished appearance, always desirable to any plants.

Young plants of such as eventually require baskets may, whilst they are small, be advantageously placed on blocks of wood; and when such have made pseudo-bulbs that are likely to flower, they may for a year or two be placed in a proportionate-sized basket without being taken off the log. The plant will grow much better than if it was torn off the block at once on transferring it to the basket. As the block will in time decay, the plant can then be easily detached from it when it needs a new basket, and will have done much better with the log in the basket than without it.

T. APPELEY.

(To be continued.)

CAMELLIA FLOWER-BUDS FALLING.

MINERAL OIL AS A REMEDY AGAINST SCALE.

I HAVE taken a great amount of trouble with my Camellias during the last twelve months. They were repotted in the spring, put into heat, during which they made excellent growth, were put under an awning through the summer, which, considering the unfortunate season, was unnecessary as a protection from the sun, yet it prevented them from getting too much wet, and they were carefully watched so as not to become too dry. The plants were healthy and the buds well formed when put into the conservatory six weeks ago, so that I anticipated a beautiful show of flowers. The buds, however, have been gradually dropping off, even after they had become a good size and otherwise appeared healthy. Can you tell me the reason of this?—J. GREEN.

[We think from your description that the roots had been allowed to get too dry after they were housed. Sometimes the same effect is produced from deficient drainage, and the soil getting sodden and sour; but we can hardly imagine that case would be yours after fresh potting in spring. All Camellias in pots flower best when the roots fill the pots, and never know what it is to be dry after the buds are formed. We have had no experience of mineral oil, which you say is recommended for destroying the scale. All such remedies require to be used with care. We have no doubt that it would kill the scale. Mineral oil is only another name for impure naphtha.]

BERRIES AND NO FRUIT.—A gentleman had employed a tailor named Berry, and upon the succession of the son of the latter to the business the bill was presented for immediate payment. With a look of amazement he dismissed the knight of the goose with the following impromptu:—"Why what a mull, Berry! you've sent in your bill, Berry, before it was due, Berry; your father, the elder Berry, would not have been such a goose, Berry. You need not look so black, Berry; for I don't care a straw, Berry."

FLOWERS WHICH ESPECIALLY FAILED IN STAFFORDSHIRE LAST SEASON.

SWEET Peas, no bloom at all. Gladioli, very partial bloom, and the colours much less vivid. Hibiscus africanus, no bloom. Verbenas, miserable. Geraniums, miserable. Annuals, in general, very bad. Roses, first blooms very good; autumnal blooms failures.

The gem of my garden, Clematis lanuginosa, was entirely cut down by the winter, but vegetated again very strongly, and bloomed profusely on a south wall in September, preserving its thick beautiful petals in full bloom for at least a month.

Mr. Beaton's Calystegia pubescens simplex has been much admired as a climber. It is extraordinary the distance it will run in one season, and its continuous bloom makes it very valuable.

Of all the Roses with me, the Gloire de Dijon is the most beautiful and the most useful—the first to commence blooming and the last to cease.

A small single Dahlia, Dahlia globulosus, is greatly admired by the ladies. It is admirable for a bouquet. I procure the seed from Mr. Thompson, of Ipswich. If I am not quite correct in the spelling of its name, it is quite near enough to identify it.—COTTAGE GARDENER'S FRIEND.

FAILURE OF PEACHES AND NECTARINES.

IN No. 614, page 209, of THE COTTAGE GARDENER, will be found a report of the failure of Peaches and Nectarines at this place. For the information of such of your readers as may not possess that Number, it may be as well to preface the subject of this paper with the particulars of the report referred to, which I will do as briefly as may be. The Peach-border here is about 220 feet long by 16 feet wide; the soil from this was removed in 1851 to the depth of 2½ feet, and being drained throughout was replaced with the top spit of a good loamy pasture in November of that year; this having been previously dug up and laid in ridges in August, the trees were planted that autumn 18 feet apart, the wall being 9 feet high. These did remarkably well until this summer, having completely covered the wall, and scarcely showing a diseased leaf until this season. This spring they broke well, had a fine bloom, and presented their usual healthy appearance until the shoots had grown two or three inches, when they began to lose their foliage and fruit, the sap exuding from the branches, and by July most of them were bare of foliage; at which time I referred the particulars to the Editors of THE COTTAGE GARDENER, at the same time soliciting their opinion and advice. They kindly replied as follows:—That two causes had contributed to the failure of my trees: First, the frost of October, 1859; and secondly, that the roots had penetrated the subsoil (this being mostly red clay), and this perfectly coincided with my own opinion, as previously expressed to my worthy employer. The first cause I believe to be correct; the second partly wrong, as I shall presently show. Their advice how to restore my trees I am sorry I have not had the opportunity of putting into practice, as the majority of the trees have gradually ceased to exist: consequently their entire removal has become a matter of necessity. The Peaches were the first that failed, the Nectarines being not quite so bad.

The best mode of cultivating wall fruit being now the order of the day, I will, for the double purpose of imparting and gaining information, relate in what state I have found this border (as this bears upon the Editors' reply to my query), what I have done, and what is intended to be done. In order not to occupy more of your valuable space than is absolutely necessary I will be as explicit as the subject matter will allow.

First, the border. This I found to be mostly in very good condition, to the full depth of the border, considering the heavy nature of the soil. Some portion of it was rather wet and tenacious, which I attribute to the following circumstances:—The time taken to complete the border in 1851 was about a month, with the labour I had at command, and during that time we had several showery days; and although I was very careful not to replace the soil upon those days, or to put any in that might be considered unfit from wet—that is, upon ordinary soils, yet upon this I believe every layer showed the state in which it was replaced, thus proving the great necessity of accomplishing such work only in dry weather, especially with soil of the above description. This brings me to the roots. These I found had not penetrated the subsoil: consequently this

was not the cause of their failure, although I believe something akin contributed in no small degree to their premature decay—namely, “the nine months’ showers,” acting upon a cold tenacious soil. This and (as you justly observed) the 1st of October, I believe were the causes that led to their disease. I am sorry to learn that I am not alone in this belief, which your pages will abundantly testify, thus showing the necessity of free discussion upon so important a subject. One other circumstance connected with these roots I think ought to be mentioned—that is, I found that many of them had gone the full width of the border with but few fibres. Many of them had more of those knotty excrescences than I like to see, whilst others appeared perfectly healthy. I can now see the importance of root pruning. I believe this is a subject that has not hitherto received the attention its merits deserve, especially in relation to soil.

What I have done is as follows:—I have had the soil removed to the depth of the border, and several inches of broken brick-bats, &c., placed at the bottom to the distance of about 6 feet from the base of the wall; upon this I placed an inch or so of cinder ashes, and beat them well down; I replaced the soil, mixing with it a good portion of leaf mould and other porous materials. Having completed it, I have planted another set of trees, which I hope will not share the like fate.

Now, a few words upon what is intended to be done. From what has been said, I believe that there is but one inference to be drawn—that is, that all this has happened from atmospheric influence: therefore, all honour to the man who originated the idea of protecting these exotics from the vicissitudes of our uncertain climate. Profiting by past experience, it is proposed to erect a lean-to house over a portion of this border, having the wall at the back, a boarded front 3 feet high, sliding wooden shutters 1 foot wide, 2 feet long. Every 2 feet, for ventilation, (back and front) to be planted thus: trees trained to the back wall, a row of pyramids next the back wall, dwarf bushes in front, planted diagonally 6 feet apart, to be lifted biennially. I think this mode preferable to pot culture. The latter is very well for private individuals—amateurs we may call them—who grow for amusement. I think gardeners have quite enough mental taxation already, without having a host of these pets to think about; and if perchance they should be overlooked for a few hours upon some warm day during their growing and fruiting season, and not have their ration of water, to find as the result a gradual diminution of fruit, and a corresponding increase of red spider. I say, however others may think upon the subject, the thought of these results certainly deters me from adopting that system of cultivating fruit trees.

Now I have thus laid the above plan before your readers, I shall feel very grateful for any suggestions or improvements that either you or your able correspondents may deem necessary.—S. A.

“A fellow feeling makes us wondrous kind;” so we can thoroughly sympathise with you under the circumstances. Had we known of that terrible frost in October—and had hand or root-pruned our trees at the end of September—we should, by arresting growth, have presented a harder consistence to the frost, and so far have mitigated the evil; but we did not know it, and therefore the destruction in many places. We have seen hundreds of trees exactly as yours; and the older the trees, the more luxuriant and the larger the limbs exposed, the more they suffered. We have no fault to find with your proposed plan of a lean-to house, trellis at back, and a row of pyramids and dwarf row of standards in front. For ourselves, we would, on the whole, prefer a trellis in front as well as at back, coming as far back as within from 3 to 4 feet of the back wall. In fact, though that would look best and permit of more varieties being grown, we are doubtful if a trellis all the way under the glass would not be the best ultimately, the back wall bearing until the trellis was full.

We do not wish to throw cold water, however, on your bush plan; it will be more interesting, and allow you to have more variety. We would avoid, however, putting much leaf mould on the soil. Peaches generally grow strong enough in such soil, with little manure waterings, and top dressing.]

THE CEDARS OF LEBANON.—The special correspondent of the *Times* in Syria, writes:—“We crossed the Lebanon by following a sheep track, and halted under the Cedars. These stately trees, several of which are believed to have been in their prime when Solomon built the Temple, stand by themselves in a gorge of the mountain, with no other trees near them. Of

‘all the cedars of Lebanon that are high and lifted up,’ these alone remain, for on no other part of the mountain are Cedars to be found. The bark of the most ancient has been cut away in places to afford room for carving names of visitors, among which one regrets to learn is that of Lamartine. In their anxiety to protect the holy places, it is surprising that neither France nor Russia has thought of protecting the Cedars of Lebanon, which have as strong a claim upon the veneration of all readers of the Bible as the shrines and relics of Palestine. These are trees such as those which suggested to the Psalmist and the Prophets the noblest imagery in the Old Testament. They are, moreover, called the ‘Trees of the Lord,’ which ‘He hath planted.’ What can be the honour of repairing a vault in the comparatively modern church of Jerusalem in comparison with that which would result by protecting from wanton and stupid injury these biblical emblems of strength, and the standard by which an estimate of Divine omnipotence is conveyed to man as an idea of the majesty of the Voice which ‘breaketh the Cedars?’ This is a work in which Protestant, Roman Catholic, Greek, Jew, and Moslem may join. Leaving the Cedars with regret, we travelled on towards Ehden, where local tradition places Paradise, in defiance of the Authority respecting the four rivers.”

GRAPES SHANKING IN GREENHOUSE.

I THANK you for answering me in your *COTTAGE GARDENER* for October the 16th, about Camellias on back of vinery. I have done as you told me, and the house looks first-rate. I have eight Vines in the house. I have cut back four of them to give more light to the house, and not to fruit any more than four at once. The Grapes in the greenhouse have all shanked off this year. They do not get much sun. The Vines are planted outside the house; the border is the entire length of the house, 25 feet, and about 8 feet wide. I am afraid the border is badly drained, and the soil seems very heavy. The border is close by the dining-room window, and wants manuring. What manure must I use, and how must I apply it? I have a piece of old floorcloth if that is of any use to keep the rain off the border. Do you think it would be a benefit to the plants to have a covering of some sort to keep frost out, instead of so much fire? It would be a shade for the plants in summer as well.—W. L.

[We are glad you find the house treated as recommended looks so well. We are sure it will if you also altered your stage. The Vines in the greenhouse most likely suffered from the excessive wet and want of sunshine, more especially as you say they have but little sun. Vines in general should have almost as much as they can receive to do well. We think a good deep drain in front of the border would be your chief safeguard. Vines in greenhouses require little or no protection at the roots. A waterproof cloth or wooden shutters would be best in your case for preventing the border being soaked; but even that will not make amends for a water-logged soil. It is most likely this more than want of nourishment caused the Vines to fail. If the roots are more than 20 inches or 24 inches from the surface, it would be better to lift the Vines, or remove fully a foot of the surface covering. If manure is given broken bones are best, or a couple of hundredweight of superphosphate of lime put on at six times during the summer when you expect a shower. It is only in severe weather that greenhouses need covering, and then it is an advantage for the plants. A waterproof cloth is the best for the purpose, and next in excellence is strong calico; but to suit also the purposes you name, tiffany or frigi domo would answer well. We have had no weather yet in which covering would be advantageous. A little fire keeps the atmosphere inside in brisker motion. The price of these articles you will see in advertisements.]

GREEN STAINS ON STONE-WORK.

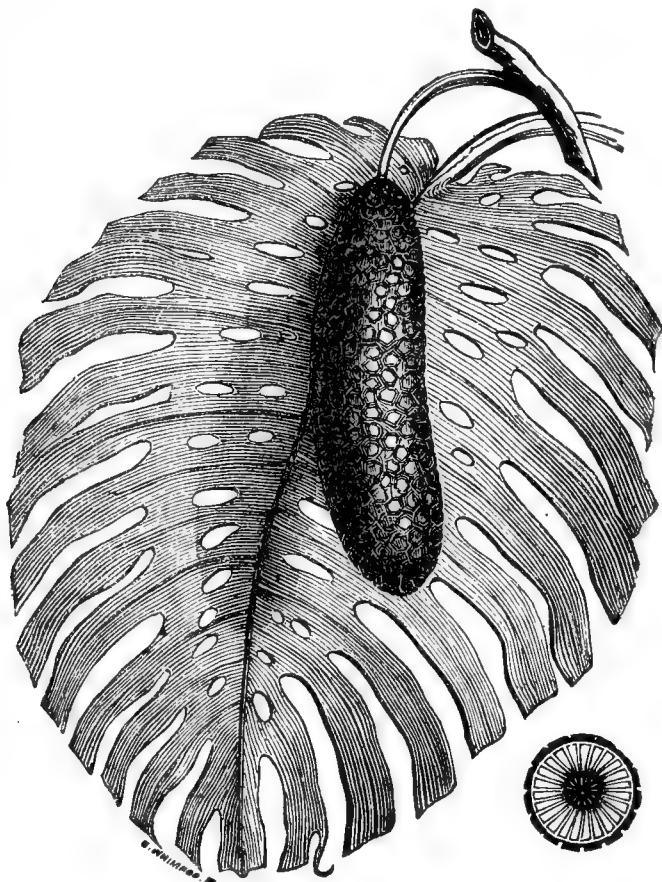
WHEN I was a man cook, and went in that capacity to grouse shooting, the maids went to the farm and garden instead of minding the pot-and-pan department: consequently the flags in the scullery got as green as grass, and it took a whole night on our return to bleach them white again. The lasses used to have their best things on to welcome back the “shooters,” and one of the helps had to look to the stains. She took a lump of soft soap from the laundry and worked it in a pail half full of hot water with a mop; and when the girls went up to bed she

mopped the stones right well with the contents of the pail, and next morning she washed down the place clean as a dairy floor, and so it went on till the next grouse shooting. Since then I often had occasion to adopt Mrs. Help's way of "putting things to rights," and never found it to fail.—D. BEATON.

NEW FRUIT.

SCINDAPSUS PERTUSUS.

THIS tropical plant is the *Pothos pertusa* of Roxburgh, and the *Philodendron pertusum* of some other botanists. It is caulescent-radicant—that is, it emits attaching fibres from its stem, as does Ivy. Its leaves are on long foot-stalks, heart-shaped, partly perforated and partly pinnatifid. Its flowers nearly resemble those of the Arum; the spadix is on short peduncles; and the spathe greenish-yellow, is gibbous and longer than the spadix. It was first made known by Dr. Roxburgh in 1824.



It is thus spoken of by the *American Gardener's Monthly* :—

"At the late exhibition of the Pomological Society, few things attracted more attention than this very remarkable plant, exhibited in fruit by Mr. James Pollock, gardener to James Dundas, Esq., of Philadelphia.

"Our cut gives no further idea of it than the mere shape and form of the leaf and fruit. The actual size of the leaf was 30 inches long and 26 inches wide, jagged and pertused as the cut represents, and with a thick metallic texture of the most vivid green imaginable. The fruit is borne in clusters of from six to eight. The one we figure is 12 inches long by 3 inches thick, and of a green colour, turning when quite ripe to a dirty white. The small figure at the base represents the actual size of the little carpels that form the fruit, and which are fleshy as in the Mulberry.

"There is nothing inviting in the appearance of the fruit. One would as soon think of taking up a green Pine cone to eat as one of them; but under that rugged and coarse exterior lies the most delicious juice we ever tasted—and if the ancient gods and goddesses had only been ascertained to have lived in the West Indies, we should not hesitate to decide positively that the nectar they indulged in was obtained from this fruit.

"We have often heard West Indian travellers speak of the delicious drink prepared from this fruit, but we know of no work wherein any allusion is made to it; and Mr. Pollock will please accept our best thanks for this, the first opportunity we have had of personally tasting it.

"It is a plant of easy cultivation where a moist temperature of 60° or 70° can be steadily maintained for it; and, whether in foliage only or in fruit, constitutes a very striking ornament."

IRON PIPES VERSUS EARTHENWARE PIPES FOR HEATING GARDEN STRUCTURES.

I CONSIDER the remarks which have recently appeared in *THE COTTAGE GARDENER*, respecting the economy of using earthenware drain pipes instead of cast-iron hot-water pipes, are likely to impress the unwary with an idea of thereby saving considerable expense; but I think if all points are fairly examined there is little in favour of these so-called cheap pipes. The difference in the heat-conducting powers of cast-iron and earthenware, I believe, is about as three to one: consequently one four-inch cast-iron pipe is equal to three four-inch or one twelve-inch earthenware pipe. And to get at the comparative cost of each, take, for example, 100 feet of four-inch cast-iron pipe, which at 14d. per foot amounts to £5 16s. 8d.; but a greenhouse which this would warm would require 300 feet of four-inch earthenware pipe, which at 4d. per foot comes to £5. These being in short lengths (two feet), would have no less than 150 joints; while in the former there would be only twelve joints, and, of course, require a boiler three times the power. No wonder Mr. Diamont complains of the cost of boilers! Thus viewing this so-called cheap system in its proper light, it is seen to be in reality more expensive, more cumbersome, and more liable to injury, breakages, &c., without taking into account less intrinsic value of material compared with that of iron. The non-conducting power of earthenware pipes may render them good in that respect for conveying hot water underground to houses at a distance—say of 200 or 300 feet from the boiler.

If Mr. Diamont, or some one else who has tried these pipes, will give us the £ s. d., quantity and size of pipe, heat which can be obtained in a certain sized house, and size and cost of the boiler, I doubt not we shall find different results from those some may have been led to infer, and prevent many from spoiling their ship for a hap'r'th o' tar.—VINCENT SKINNER, *Horticultural Manufactory, Bridewell Street, Bristol.*

NEW OR RARE PLANTS.

ERODIUM PELARGONIIFLORUM (*Pelargonium*-flowered *Stork's-bill*).

Recently discovered by Heldreich growing on shady rocks 3000 feet above the sea, in Anatolia, between Karaman and Ermenek. White with purplish marks. It is so far hardy that it may remain in the borders in winter if the roots be protected.—(*Botanical Magazine*, t. 5206.)

CISSUS VELUTINUS (*Velvety-leaved Cissus*).

It is probably a Malay plant. Chiefly ornamental by its foliage, the upper surface of which is marked with white lines, and beneath is crimson, as are the leaf and flower-stalks.—*Ibid.*, t. 5207.)

ANÆCTOCHILUS SETACEUS, var. INORNATUS (*Plain-leaved fringed Anæctochilus*).

This came to Kew from the Botanic Garden at Java; "the leaves, though of a rich coppery hue and velvety character, are wholly destitute of reticulations."—(*Ibid.*, t. 5208.)

SALVIA SCABIOSÆFOLIA (*Scabious-leaved Sage*).

It has been described also under the various specific names—*pinifolia*, *Tauricæ*, *scabrosa*, *Habliziana*, and *vulnerariæfolia*. Native of Tauria. Introduced to Kew in 1798. Flowers creamy white.—(*Ibid.*, t. 5209.)

ALOE ALBO-CINCTA (*White-margined-leaved Aloe*).

Introduced from Algoa Bay by Wilson Saunders, Esq., through his collector, Mr. Cooper. Flowers scarlet tipped with yellow. "By far the handsomest of the genus."—(*Ibid.*, t. 5210.)

SONCHUS RADICATUS (*Long-rooted Sow-thistle*).

We must not judge of this and its many kindred species from our English weed. It is a native of the Canary Islands. Flowers large and yellow; leaves deeply lyrate and very hoary.—(*Ibid.*, t. 5211.)

PRESERVATION OF LARGE FLOWER-POTS.

VERY large flower-pots are more likely to be broken than small ones, not merely by the weight of soil they contain and the greater force of a slight concussion, but by the vital force of the roots, which is much greater, and breaks more pots than many would think probable. Nothing will withstand this force. A Mushroom has been known to lift a flagstone of twenty pounds weight three inches in one night; and walls are often thrown down, and pavements thrown up, by roots of trees in the accumulated and persevering power of years. Pots in orchard-house trees are particularly liable to suffer in this way, and are well worth banding with iron hoops.



The cut represents a pot so "fixed," which we recently saw at a horticultural exhibition. Holes are easily drilled through the pots, and rivets applied as represented. Of course, the hoop can be painted any colour to suit the taste of the owner.—(*American Gardener's Monthly*.)

TWO-ACRE FARMING.

A CORRESPONDENT, who, however, gives no name, writes us as follows in relation to the work "How to Farm Two Acres Profitably," and his strictures we insert at full, with Mr. Robson's comments upon them.

Our complainant says—

"Mr. Robson has published 'How to Farm Two Acres Profitably.' Admitting, for the sake of brevity, that the directions he gives in that little work are very good, yet he has omitted a very important matter—the point, in fact, on which the whole practicability of the undertaking rests. He has not said a word of the value of the products of the cultivation; not a word of the costs of labour, manure, seeds, rent, rates, &c., incident to the farming; no balance-sheet to show that it can be done profitably, or even without loss. Of course, no one example would be likely to be strictly applicable to others in its pecuniary results; but either Mr. Robson has experience in the management of such a limited extent of land, and in that case should have given his *Dr.* and *Cr.* account of it, or, if he has not that experience, then he has written very much at random, and the part of the title 'profitably' may be a misnomer, and lead astray those that might be tempted to reduce his precepts to practice."

The somewhat sharp rebuke contained in the above would have been more severe had it borne the signature of some one well versed in rural affairs; but as it is, I am constrained to suppose the writer is one of those who like everything to have that smooth and straightforward appearance of ultimate success which quack medicines, absurd railway speculations, and South American mining schemes are always embellished with; a certain cure, or cent. per cent. for our money, is always assured us by the prospectuses of these undertakings. But I should wish our complainant to understand that I do not belong to this class. I should rather stop short of publishing what I really do know than advance a single idea that I do not. It is perfectly true I could have given a considerable extent of information about the value of produce, cost of cultivation, and the other items mentioned above, but I could not have given anything like a satisfactory return without swelling out the little book much beyond the size intended for it to be; and without entering into a multitude of figures, which I am persuaded the general public would care nothing about, a balance of *Dr.* and *Cr.* account could not have been given that was ap-

plicable to any but one locality. Take, for instance, the following example:—A friend of mine is paying £16 per acre rent for land near London, while another has land as much like it as possible for £1 16s. a few miles from Liverpool. I believe the cost of labour, or I should say labourers' wages, are about alike in both places, and one of the articles of considerable value on a large farm—that is, hay, is much dearer in Lancashire than in London; but the particular purpose to which the ground near London is put to enables the occupier to pay the extra rent and other expenses, and make his holding as profitable as the other does. But to enter into all this in a small work is out of the question, and to give a sort of tabular form to the assets and expenditure would have been easy enough, and it could have been made to assume a favourable aspect even without withholding a single fact, or publishing a falsehood; for, as one of our great political writers used to say, "any idea whatever might be supported and proved correct by figures." Have not extensive railway and banking accounts been adopted, and accepted and passed by shrewd, keen, calculating men over and over again, and the whole in time found hollow? I therefore look with much suspicion when I see a long array of figures added to give weight to a proposition when merits were not sufficiently apparent to show themselves without this scholastic parade. But in our own case let us take another example.

A neighbour of mine has four acres of Potatoes, which, notwithstanding the high price they are selling at, will barely realise a little—not £5 an acre—over the expense the seed cost him in the spring: out of this he has to pay for all cultivation, digging up, mulching, &c., making the crop of Potatoes a dead loss to him. Now, I ask our complainant, would it be fair to found a balance-sheet on an undertaking like this? and yet there was no mismanagement, everything was done to secure a crop that a reasonable expenditure suggested. Potatoes to plant the piece were brought from a distance of 150 miles or more by the cheapest routes, and bought by a practical man well versed in such matters, and yet the result was as stated. But I will give an opposite case occurring at the same place.

Some years ago he sold the crop of Potatoes on the ground for £45 per acre, the buyer taking them up and marketing them within a given period. Now, to give an estimate founded upon this unusual occurrence is equally erroneous; and such cases may be multiplied. There are many ways in which the term "profitably" may be applied as well as in pounds, shillings, and pence affairs; and those who insist on reducing all things to the standard of current coin are not always the most economical. A fictitious ideal value is of necessity given to many things; and in the case of "Two-Acre Farming," where the produce is in a great measure expected to go to the table of the occupier, it would be unjust to tax him with £20 and odd in an ideal calculation for Potatoes for the present year for half an acre of ground, when, perhaps, he has no more really good than might be consumed by a family of six or eight persons in the season, and that with economy in their use. The fact is, that the work was intended to show how a two-acre plot could be made to furnish the greatest possible quantity of useful produce at the least possible expense, leaving to the occupier to make what arrangements he thought proper with that produce; but the supposition was that most of it, probably, would be consumed by his household excepting the milk from the cow, and that all denizens of a town know the full cost of. The garden vegetables, the fruit, the pig, and a portion of the milk, if not the whole, in the shape of butter—fresh and salt—we suppose might find their way to his table at one time or other; and might they not be profitably used then? To others I leave the task of fixing the value of such things; and it generally happens that those who undertake to appraise their own results put the figures pretty high, and in that case a profitable return is made out. Such, however, was not my view of the matter: I endeavoured, from practical observation and experience, to place before the reader the cheapest and best modes by which the greatest amount of useful produce would be in a series of years obtained from the quantity of ground named, and at the least expense in labour and material, and if this be done it will, in general, be profitable; but to assert that it will always be so, and to attempt to prove the same by column after column of figures, is just as likely to mislead the reader as Moore's predictions of the weather. The crop of Potatoes this year is scarcely one-tenth part of what they are in favourable seasons, and Hops are about one-eighth of what they were last—where is the individual that

will tell us what these two things will be next year? and yet it would be easy from calculations of the past to show in a specious manner what may be expected, the axiom being based on facts, so called; but I confess to not being able to see the utility of such things, even when the writer puts them forth without any attempt at "cooking"—the parlour phrase for a deceitful balance account—so that I fear our complainant must complain still, for to comply with his wishes would be to compile a mass of matter, which, however accurately given as pertaining to the past, would have very little weight with the future. Can any one tell what kind of a season that of 1861 will be, or even the state of the weather a week hence? To those I leave the task of supplying information—such information as is applicable to all the cases coming under our complainant's catalogue—satisfied that they only are capable of giving it.—J. ROBSON.

NEW BOOKS.

CORDON TRAINING.*—The object of this little book is to introduce to this country a system of training which has for several years been practised in France with some measure of success, under the name of "Cordon," from the branches having the appearance of a cord or rope, by the laterals being kept closely pinched in. The work is written in a clear and practical style, and the author evidently knows what he is writing about. To those who are curious in this matter we can confidently recommend this treatise. To give an idea of what the author means, we shall give the following in his own words:—

"CORDON TRAINING—ITS ADVANTAGES AND USES.—Cordon training derives its name from its fanciful resemblance to a cord or chain. A certain number of leading branches are carried out, and on them spurs are developed, so that the branches look somewhat like twisted cables or chains. It is not an entirely new plan, but has the advantage of being based on well-known and valuable methods long in use. In the present case its value chiefly consists in its combinations and modifications required by the peculiar character of the climate of England. In the case of in-door culture much more novelty was admissible, because in this instance the dry and equable temperature aided powerfully in its success. Objections made to cordon training in the open air—which, however, are not based on experience, being generally made by persons who have never even seen the trees during one season in orchard-houses—fall at once to the ground.

"But for an amateur to take up cordon training and to endeavour to practise it, irrespective of the exigencies of our rainy skies, and to expect results attainable in other dry and sunny localities, is simply absurd.

"I have myself carefully studied the system, and followed it out on a fair scale for some years, both in the open air and in the orchard-house. While, therefore, convinced of its value, I trust it will not be considered presumptuous in me to say, that I believe that an important portion of this peculiar system would prove a total failure unless it were carried out exactly as described in these pages. But as it is so simple that any one can understand its rules, there can be no reason why mistakes should occur, nor is the manual labour so great as to prevent even ladies from undertaking it. I offer my suggestions to amateurs with a certain confidence, since I have tried and rejected most of the systems which are, at this day, considered excellent in France. One form was quite unsuitable to the extreme dampness of our climate, which induces a too luxuriant growth in the autumn; while the want of proportionate sun heat renders it impossible to have *well-ripened wood*,—and without this, what tree will ever bear?

"Another form, more adapted to meet these difficulties, was far too complicated in its system of disbudding,—which, by-the-by, is a plan requiring much caution in its adoption, and is not very necessary at any time. It is true this last system produced a fair crop of fruit, but it required too much attention to make it generally valuable. Proceeding, therefore, on a new mode, which arose out of the cordon system itself, I gradually adopted it, and, after two years' trial of this *new combination*, I do not hesitate to recommend it as the best which exists at the present day. A large and important portion of this system—the management of the spurs and the growths on them—is very similar to

that recommended by Mr. Rivers in the chapter on 'Summer Pinching.' Some of the terms used in horticulture are so droll as to excite wonder at their use, but it would cause confusion to endeavour to introduce any new ones. But certainly 'pinching spurs in the summer' seems no particular recommendation in gardening.

"As was said before, cordon training has the immense advantage of being simple. There is no elaborate tying-in of summer shoots, as old as Shakspeare—'Tie up those dangling Apri-cocks;' indeed, few ties are required even in the winter. The forerights are preserved, which are of much value in increasing the amount of fruit. The spurs are compactly and regularly distributed, and are thus more easily sheltered from the weather, and more readily examined and pruned. No long straggling shoots are ever seen. The supply of new wood of the proper bearing age, and the regular distribution of the leaves, insure a succession of crops. The fruit is all produced close to the main stems. All parts of the tree have a fair chance. The produce is doubled, since half of the intervals between the branches is only required. Twelve inches are sufficient for the parts where eighteen or twenty-four inches were formerly required. The trees are as readily detached from the walls to clean them as Vines are from the wires, and from their simple forms no injury can happen to any portion. The trees are only lightly secured to the rods (which are safer, after all, than galvanised wires), and it is easy to clear off cobwebs and insects from the back of the trees—an advantage of incalculable value, as the gardener well knows. All these, and others, are the results of cordon training.

"But one of the *chief* recommendations of the system is the *rapidity* with which a high wall is clothed with productive spurs. In four years a wall, twelve to fifteen feet high, can be covered with fruit-bearing wood, all disposed in regular, beautiful, and harmonious succession.

"This will be obvious by a reference to the frontispiece, where the different years are indicated by their progress; and as a tree, planted at the angles shown, *must* grow fast, and yet be fruitful, what can be desired more? What is shown in the frontispiece is a representation of one kind of cordon, and that the very best,—the 'diagonal,'—with three leaders on each tree. The trees are planted in the ground at thirty-six inches from their neighbours to right and left, there being thus twelve inches of interval between each leader. In France the single cordon with laterals of fourteen inches succeeds well, but it would fail in England; the double cordon is better adapted. These two forms clothe a wall with amazing rapidity, and if suited for our climate would supersede all others. The triple cordon I have never seen but in my own gardens; with laterals in the old system it would not advance fast enough, which is one important condition in its use. A quadruple cordon would take so much time to complete as to make it less desirable; it might, however, suit very moist localities better. With spurs, as now recommended, the triple cordon unites most of the conditions required for success. It covers the wall rapidly, and bears well and regularly: nothing better can be said in its favour. Its form is also so regularly beautiful, that even casual observers must be struck with the harmony and grace of the whole tree. No gentleman likes to have his valuable walls covered with trees as unproductive as they are ungainly; but any one who has seen a *well-managed* cordon on the diagonal plan will not fail to give it the palm as to beauty.

"By means of light guiding-rods the young wood creeps as straight as a walking stick, upwards, and on this depends much of the handsome appearance of the trees. So that, were a wall of these trees drawn, each of them ascending with mathematical regularity, it would not be exaggerated: a moderate amount of skill and patience would easily effect it. The various forms of cordon training remain to be noticed. They are—diagonal, the best suited for a wall; for in-door or out-door culture it should always have three leaders. The vertical, useful for trees trained against the pillars of the orchard-house, where they bear admirably; they also answer well if planted in the borders—if for walls in the open air, then the number of leaders should not be less than five, or there would be danger of the trees producing too much wood. The spiral, round wires for trees in pots, or round the pillars of the orchard-house, where they have a pretty effect—it will also suit large Pear standards in the open ground, or in the borders of the house. Lastly, the horizontal—i.e., all fan-shaped (*palmette* of the French), or laterally developed trees; all standard trees in the open ground or within the house, and planted in the open borders."

* *Cordon Training of Fruit Trees, Diagonal, Vertical, Spiral, Horizontal, applied to the Orchard-house and Open-air Culture.* By the Rev. T. Collings Bréhaut. 12mo. London: Longmans. 1860.

DANDELION AS A MEDICINE.

THE value of Dandelion as a medicine in liver complaints and indigestion has been so striking in different instances in my own neighbourhood, I venture to give a detailed account for the benefit of others, and hope it may be the means of securing a corner in more than one cottage garden for a bed of this prizable weed.

The first case which occurred was that of an old man near seventy, whose active and temperate habits had kept illness away, till misfortune and neglect induced weak health by degrees, and this ended in severe illness. The medical man prescribed for liver complaint, as he termed it, but the patient received no relief; and dropsy of the body as well as of the limbs followed. The hands were nearly useless, and, together with the old man's weak state, prevented him for some time from dressing himself. The doctor considered more medicine unadvisable, and for a short time nothing was tried. It was supposed further help was impossible. A stock of liquid Dandelion was, however, sent by friends at a distance, with a request that it might be tried. Its success will be known when it is stated the old man has entirely lost the swelling in his body and limbs, and can once again enjoy life, grateful for the gift of health. For a few weeks he was without his medicine, his stock having fallen short, and the swelling again returned in part, but again gave way, and left entirely a second time on his resuming the Dandelion. No other medicine was taken after this was first tried; and careful diet was the only other means used till sufficient strength had returned to allow of change of air.

The second case was a very severe confirmed liver attack, and had caused great suffering for two years before the Dandelion was tried. The patient's skin was literally dark yellow, and medicine had proved of no avail. No swelling accompanied this instance, but weakness and inability to retain food were constantly present. A few weeks' trial of Dandelion gave hope of something like a return to health; and half a year's use has very nearly completed the cure. There is scarcely a trace of any symptom left, and the skin is almost its natural colour. The husband's gladness on his wife's recovery expressed itself in a determination never to be without Dandelion in the house again.

Another case was that of a neighbour suffering from scurvy, which had marked the whole body in patches the size of half a crown or a crown. She was advised to have medical treatment, but delayed from week to week, thinking her good constitution might throw it off. However, no amendment came, and she was induced by persuasion to try Dandelion as a relief, but not with any hope of cure. After a fortnight's trial, she had improved so rapidly that she continued it, and in little more than five weeks was in her usual good health, to her own surprise as well as that of the friend who named this root to her.

I could add other cases as striking, but trust these three strictly correct accounts are sufficient, and should be glad if they prove of use to any sufferer.

Interesting papers on the Dandelion have appeared in THE COTTAGE GARDENER at different times, and two of them speak of it as being refused by cows, which is certainly a mistake. I once put it to the test, and found it taken eagerly; and two farmers to whom it was named agreed it was a favourite plant with cows.

Our cottagers make tea of the flowers and leaves, as well as the roots, but the last are best, being strongest. They may be dried and kept for winter use. In using the fresh or dried roots, it is recommended to slice and boil six or eight ounces in two pints of water till reduced to half. Four table-spoonfuls to be taken three or four times a-day, between meals.—S.

TO CORRESPONDENTS.

ANT-HILLS MIXED WITH GAS LIME (W. H.).—We should have used the heap of ant-hill rubbish you speak of freely as it was naturally; but from our own experience we can say nothing of the mixture than that we should be afraid of it as a compost for Pelargoniums and Fuchsias. It is more suited for the kitchen-garden crops we think.

ROSES FOR A SOUTH FRONT—PLANTING POTATOES (A Constant Subscriber).—Where the Cloth of Gold Rose has been allowed a respite from pruning for a few years in the southern counties, it has made a fair beginning to bloom; but to hope to restrict a gardener from watering a bulb for six months after potting it, or from pruning a Rose three or four times in a year instead of once in ten or twelve years, and then only to thinning it, would be to hope against hope: therefore we prefer to advise you to plant a Fellemberg Noisette instead. Cromatella was once the name of Cloth of Gold. As for autumn-planting Potatoes, it is now too late to think of it; and the land is so thoroughly soaked that we would not advise planting

Potatoes during the winter quarter. The best market and kitchen-gardener we know, never plants a Potatoe but under glass till the first week in April, never plants but the very earliest kinds, and never has the disease in one out of ten bushels. We have been watching his movements since 1853, and that has been his constant practice.

POTTED VINES IN A COLD GREENHOUSE (Peckham Subscriber).—In such a house you must let your Vines break their buds without any extra excitement. We can recommend you to do nothing, but to take carefully away now a couple of inches or more of the surface soil, and replace with rich compost; and, if frost is apprehended, either plunge the pots or surround them with litter or an old mat tied round them. The roots in a pot at all exposed will be more easily injured than the buds and wood, which, if well ripened, will stand all they are likely to receive in an orchard-house.

CLIMBERS FOR GREENHOUSE (P. E.).—As respects the Stephanotis, all will depend on the heat of the conservatory. If it is rarely below 50° in winter, generally nearer 55°, the plant will do admirably. If your house at night averages from 40° to 45° or so, the Stephanotis will languish and ultimately die. Such climbers as Ipomœa Learii, Mandevilla suaveolens, and even the beautiful Passiflora quadrangularis and Buonaparteia and alata will do well in such circumstances, especially if after pruning back in autumn, when fully established, the stems were brought and fastened loosely against the division of the two houses in winter.

SCALE OF PEAR TREES (R. B.).—Gishurst Compound, 8 ozs. to a gallon of water, will kill this vermin. See page 123 of our No. 635, published November 27.

BRITISH BIRDS (Progressionist).—We know of no work cheaper than Mr. Yarrell's "British Birds," giving an "entire figure of every species." Macgillivray's "History of British Birds," gives only the heads, claws, and such feathers as are required for identifying the species. It is in five volumes, and may be bought sometimes cheaply second-hand. The descriptions and details of the habits of the birds are by far the most accurate and interesting that we know.

SCOTTISH GARDENER MAGAZINE (A Subscriber).—It is published monthly by D. Guthrie, 337, High Street, Edinburgh. Price 6d.; 7s. a-year, free by post. Negretti, in Hatton Garden, would furnish the instruments you ask about. Festuca glauca seed we do not know the price of, but any wholesale seedsman will tell you, if you write to him.

VARIOUS (T. Tempest).—The Elton Cherry-bud, or graft, failed, and you have been cultivating the wild stock, the fruit of which is small and bitter. If you regraft the stock it must be on the branches; but you had better plant a young tree. The Plums you mention will succeed as bushes and pyramids. Get rid of the hens that persist in pecking the cock.

WORK ON FRUIT CULTURE (A New Subscriber).—You will find all that you require in "Fruit Gardening for the Many," published at our office. For five postage stamps you can have it sent to your direction free by post.

SPERGULA SAGINOIDES (A Schoolmaster).—This is neither "Dodder" nor "Poverty," but a little hardy trailing evergreen, about half an inch high, rooting from the joints of the stems, and a native of Great Britain. It is one of the Caryophyllaceæ, or natural order of Pinks; the minute flowers are white, and a drawing of it may be seen in Sowerby's "English Botany," f. 2105. It and S. prolifera would do on a light soil, especially if moist. On your six-feet-wide border a row of trees might be grown against the wall, and a row of dwarf trees to be taken up annually next the walk; but both the wall and dwarf trees should be at least fifteen feet apart, the dwarfs being planted opposite the middle of each of the spaces between the wall trees. Buy "Fruit Gardening for the Many," as recommended to-day to another correspondent.

NAMES OF FERNS (B. Fielder).—One of the forms of Tenuium chamædrys. No mowing machine yet invented works without making a clicking noise. (W. W.).—1, Woodwardia radicans; 2, Pteris hastata, var. macrophylla; 3, Asplenium bulbiferum, var.; 4, Pteris longifolia; 5, Blechnum cognatum; 6, Selaginella cuspidata.

NAMES OF PLANTS (Harrie).—Such scraps are indeterminable. The woolly-leaved plant appears to be an Origanum.

POULTRY AND BEE-KEEPER'S CHRONICLE.

POULTRY SHOWS.

- DECEMBER 12th, 13th, and 14th. NORTHERN COUNTIES (DARLINGTON). Sec., J. Hodgson, Darlington. Entries close Nov. 19th.
- DECEMBER 12th, 13th, 14th, and 15th. CRYSTAL PALACE. (Poultry, Pigeons, Rabbits, Ornamental Water Fowl, and Pheasants). Sec., Mr. W. Houghton. Entries close November 10.
- DECEMBER 18th and 19th. LORD TREDEGAR'S, at Newport, Monmouthshire. Sec., Mr. C. H. Oliver, Commercial Street, Newport. Entries close Nov. 21st.
- DECEMBER 21st and 22nd. HALIFAX PIGEON SHOW. Sec., D. R. Edgar. Entries close December 8th.
- DECEMBER 27th, 28th and 29th. KENDAL. Hon. Secs., G. C. Whitwell and T. Wilson. Entries close December 12th.
- JANUARY 2nd and 3rd. CORK. Sec., J. Dowling, Janeville, Sunday's Well. Entries close December 15th.
- JANUARY 16th and 17th. POULTON-LE-FYLDE. Hon. Sec., Mr. J. S. Butler. Entries close January 1st.
- JANUARY 30th and 31st. ULVERSTON. Secs., Mr. T. Robinson and Mr. J. Kitchen. Entries close January 10th.
- FEBRUARY 6th and 7th. LIVERPOOL. (Poultry and Pigeons). Sec., Mr. A. Edmondson, 4, Dale Street.
- JUNE 4th, 5th, 6th, and 7th. BATH AND WEST OF ENGLAND.
- N.B.—Secretaries will oblige us by sending early copies of their lists.

BIRMINGHAM POULTRY SHOW.

WE resume our report of this great Show, and are now at liberty to comment on the classes and awards we published last week.

We begin with a novelty—the introduction of a class for *Silver Grey Dorkings*. The experiment was successful, and we shall look another year for more beauty of plumage and increase in size. We, however, doubt whether they will ever be able to compete with classes for open colours. The new classification brings them under the same stringent rules as any other class where feather is essential, and a trifling deviation in this particular suffices to neutralise any amount of merit on other points. We are able to speak in high commendation of the four prize pens belonging to Mr. Dolby, the Hon. W. W. Vernon, Lady Desvœux, and Mr. Barttam. Mrs. Cargey, Mr. Dolby, and Lord Hill, the first who bred these, showed by their birds we may look for good ones next year.

If any apology were necessary for the length of our remarks on the different Dorking classes, we will make it by saying that *sixty-three* pens of this breed are mentioned in the prize list for the general classes, and twenty in that for the single cocks—in all eighty-three pens.

The coveted distinction of the Dorking Cup went, for the first time, we believe, into Hampshire, gained by a new exhibitor—the Marchioness of Winchester. Lady Louisa Thynne was second, the Hon. W. W. Vernon third, and Capt. Hornby fourth. These four pens reached the unparalleled weight of 160 lbs. The *Chickens* were not inferior, and two old and meritorious yards sent their best birds for the great event. Capt. Hornby was first, and Mr. Wakefield second; Mr. John Shaw and Sir H. Desvœux third and fourth.

Capt. Hornby was first in *Hens* and *Pullets*; but here again Mr. Wakefield ran up a good second, and Mr. Bromley also.

The *White Dorkings* were very large, and shown in beautiful condition, but the entries were not sufficiently numerous.

In concluding our notice of these birds, we are bound to say we have never seen better classes at any Exhibition. The improvement is not confined to weight, but is visible in the condition of all the birds shown. The sickly birds, formerly so common, are now not met with, and the heavy pens no longer form the exception. We cannot help noticing the absence of rose-combed birds. It must be, though we can scarcely believe it, that the ridiculous doubt raised as to their purity has deterred exhibitors; and we are led to mention it, because in our walks round the Show we heard people gravely affirm that white feathers in the tail, or white spots on the breast, were signs of degeneracy, if not of impure blood. These notions cannot be contradicted too strongly.

We should not be doing our duty if we spoke highly of the adult *Spanish*. There were only three pens in which there were three perfect—Mr. Teebay's, Capt. Hornby's, and Mr. Rake's. Nearly all these birds seemed out of condition: the Hens had not finished moulting, and the fat Cocks had the white of their faces apparently recovering from some cutaneous disorder. The *Chickens* made amends: they were very good, especially Miss Rake's cup pen, and Mr. Rodbard's.

The classes for *Spanish Hens* and *Pullets* did not fill as well as they should. The prizes are good; and these pens are so easily filled, the competitors should be numerous.

Cochins were numerous and excellent. Distinguished among them all were Mr. Tomlinson's first-prize pen, two belonging to Mr. Stretch, one remarkable pen the property of Mr. Peploe Cartwright, and the *White* of Messrs. Chase and Dawson. All these were large, symmetrical, good in feather, and lacking nothing in point of condition. Among these, as if it were to prove the goodness of the strains, Mr. Tomlinson takes two prizes, Mr. Stretch two, and Mr. Cartwright three. There were many more good birds in these classes, twenty pens being noticed besides those taking prizes. We were glad to see Mrs. Fergusson Blair second on the list for *White* in a good class.

The *Brahma Pootras* are now well established, and support their rights by good entries. Mrs. Craigie and Mr. Teebay took all the prizes; hard run, however, by Mrs. F. Blair and Mr. Botham. These were excellent.

We should like to see the *Polands* more numerous. All the classes were good. The *Silvers* were of most unusual merit, every pen in the adults was named in the prize list. The *Black* and the *Golden* were very good, especially the cup pen of Mr. Dixon, and the prize *Chickens* of Mrs. Pettat.

The *Golden-pencilled Hamburgs* have been improving for a long time, and the classes here were not exceptions, especially the *Chickens*. Messrs. Wilkinson, Munn, and Martin deserve especial mention.

The *Spangled* were in full force. Mr. Lane took the Cup

and both first prizes, closely followed in each by Mr. Worrall. There has been much progress in these birds, and all the requirements of the Judges have been accurately carried out.

Mr. Keable took both first prizes with *Silver-pencilled*. This gentleman reminds us of the exploits of Mr. Archer in former times; he is wanted again in these classes. There was this year an improvement, but they are neither up to the old mark nor to the Golden.

Yorkshire took the Cup for *Silver-spangled*, Mr. Dixon beating with adults; Mrs. Pettat with *Chickens*. These were both first-prize pens; and those that followed, belonging to Messrs. Teebay and Hardman, were also very good. The goodness of the *Chicken* class and the encomiums of the Judges lead us to look for numerous entries at Liverpool.

Again the *Hen* and *Pullet* classes were weak, although three prizes were offered in each.

True to their old locality the *Malays* came strong from the metropolis, and but for Mr. Manfield all the prizes would have gone to it—that gentleman took a second. There were many good birds shown, and Messrs. Rumsey and Sykes richly deserved their prizes.

The *Game* classes formed a good show of 186 pens; and, apart from their undeniable beauty and symmetry, they as usual claimed the admiration of every one by their perfect condition and feather. Where seventy-eight are either prizetakers or Commended, and where a class is mentioned in such terms as we have used, it would almost seem all had been said that was necessary; but we feel bound to mention some of the most remarkable. Capt. Hornby first in adults, second in chickens, the Hon. W. W. Vernon, Mr. Archer, second and third, and Messrs. Woods and Dawson—all shone even among birds that seemed perfect. Then in Class 3 Mr. Moss carried off first prize and piece of plate for the best pen of *Game* in the Exhibition. Mr. Archer second. In the next class Mr. Moss took the first. The *Blacks* were very good, especially those belonging to Mr. Dawson. Mr. Doncaster was at the head of both classes of *Duckwings*, but was pressed by those that followed. *Whites* and *Piles* were very good, but we thought the palm of excellence was with the latter. Unlike other similar classes, we can speak most highly of those for *Game Hens* and *Pullets*: they were numerous and excellent. Distinguished among them all were the birds shown by Mr. Swift, the Hon. G. Howard, Miss Moss, and Mr. Archer, who took two prizes. We will conclude our notice of this breed by speaking of the *Game Cocks*. They were very good, and every breed was represented. We especially mention that belonging to Mr. Douglas and Messrs. Dawson and Robinson. We also noticed a *Pile*, which we thought one of the best birds we ever saw.

It would have been curious and almost incredible if the weight of the *Dorking* Cocks shown in the "Single Class" had been ascertained. We have certainly never seen so many good birds together. Twenty-one were noticed by the Judges. Lady Louisa Thynne took the first; Mr. Hill and Dr. Hewson second and third. We need hardly say these were uncommon birds. The Highly Commended Cock belonging to the Marchioness of Winchester was claimed at ten guineas; and nearly all the birds that were not placed at prohibitory prices were sold.

The show of *Spanish* Cocks was the best class of this breed in the Exhibition.

Cochin-Chinas were a moderate show. The best birds of this breed had evidently been put in the pens. *Brahma Pootras* were very good. Mr. Craigie and Mr. Botham took the honours. The *Polish* were weak, and the *Hamburgs* only average pens. The *Silver-spangled* were the strongest.

The *Varieties of Game Cocks* brought a large muster to compete, and the names quoted in the other classes were again the successful.

The same may be said of the "Sweepstakes." Mr. Gorton, Capt. Hornby, Hon. W. W. Vernon, and Mr. Archer, took the prizes.

We are glad to record a great improvement in the *Golden* and *Silver-laced Bantams*, especially in the former. They have been neglected for years. In these and in the *Blacks* it was a very close competition which should be first or second.

The *Game* were strong in every way, and some of the *Duckwings* were beautiful.

The *Single Cocks* were a very large class. Seeing there are classes for *Game*, *Sebright*, *Black*, and *White Bantams*, we think the "Various Class" might be dispensed with, as there is really nothing to show in it.

The *White Geese* weighed 60 lbs., 50 lbs., and 45 lbs. The *Grey* weighed 70 lbs., 66 lbs., and 56 lbs. Mr. Fowler was first, and Mrs. Fergusson Blair second and third. We again congratulate this lady.

The *Aylesbury Ducks* weighed 31½ lbs., 31 lbs., and 27 lbs. These were not up to last year's weights, nor was the class as numerous.

The *Rouens* were better represented, bringing thirty-two pens. The successful weighed 28 lbs., 26 lbs., and 25 lbs.

The *Black East Indian Ducks* were remarkably meritorious, and contributed to the old honour gained in this class by Mrs. Beasley and Miss Steele Perkins.

The "Various Class" was a success, producing White-eyed, Brahma, Ruddy Sheldrakes, Mandarin, Carolina, and Call Ducks.

The *Turkeys* weighed—adults, 61 lbs., and 55 lbs.; young, 47 lbs., 43 lbs., and 42 lbs. The third prize was given to an *American* pen, and it would be unfair not to notice a very remarkable breed of *Virginians* shown in this class. They are blue, slightly pencilled with black, and marked in black spots.

This brings us to the close. We must explain that the present report, and the list of awards published last week, must serve as keys one to the other. It will, we hope, be seen that in a paper of this length it is impossible to mention all names that deserve it.

Many pens showed that the difficulty of finding three hens remained as great as ever. They also proved that the season has not been favourable, and, as an exhibitor said to us, that the food this year has not done them as much good as usual. The continued success of certain strains and yards also proves that success is the result of painstaking, and not a chance.

Everything this year was a success. We congratulate the acting members of the Council and the Poultry Committee heartily. They deserve the best thanks of their townsmen, of exhibitors, and spectators, and all interested in the question. We hope we shall have to return to this when we announce the Society is free from debt.

The JUDGES were—The Rev. Robt. Pulleine; G. J. Andrewes, Esq.; Mr. Baily; Mr. Hewitt; and Mr. Challoner.

Having published the prizes in our last number, we now add only the commendations.

GAME (Black-breasted Reds).—Highly Commended, E. Archer, Malvern; Mrs. W. Dawson, Selly Oak, near Birmingham; J. Fletcher, Stoneclough, near Manchester. *Chickens.*—Highly Commended, G. W. Moss, the Beach, Aigburth, near Liverpool; H. Shield, Northampton; G. Cargey, Sandon Farm, Stone, Staffordshire; J. Fletcher, Stoneclough, near Manchester. Commended, C. Lucas, Wigginton, near Tamworth; R. Woods, Osberton, Worksop, Nottinghamshire.

GAME (Brown and other Reds, except Black-breasted).—Highly Commended, Mrs. G. W. Moss, the Beach, Aigburth, near Liverpool; J. Jennens, Green Lanes, Small Heath, Birmingham; J. M. Baker, Hall End, near Tamworth; T. Robinson, the Gill, Ulverstone; J. Fletcher, Stoneclough, near Manchester; T. Staller, Stand, Manchester. *Chickens.*—Highly Commended, J. Payn, Green Lanes, Small Heath, Birmingham. Commended, G. Cargey, Sandon Farm, Stone, Staffordshire; J. P. Smith, Lower Wick, near Worcester; E. Archer, Malvern; H. Horton, Albert Cottage, St. John's, Worcester.

GAME (Blacks and Brassy-winged, except Greys).—*Chickens.*—Highly Commended, T. Penn, Cofton Hall, Cofton, Bromsgrove. Commended, Messrs. Bullock & Rapson, Leamington.

GAME (Duckwings and other Greys, and Blues).—Highly Commended, T. Penn, Cofton Hall, Cofton, Bromsgrove. Commended, F. Hardy, Prince of Wales Inn, Bowling Old Lane, Bradford. *Chickens.*—Highly Commended, J. Bradwell, Southwell, Nottinghamshire.

GAME (White and Piles).—Highly Commended, W. Newsome, No. 30, Milverton Crescent, Leamington. Commended, T. T. Burman, Lady Lane, Hockley Heath, near Birmingham; M. Billing, jun., Yardley, Worcestershire. *Chickens.*—Commended, Messrs. Bullock & Rapson, Leamington.

GAME HENS (any variety).—Highly Commended, Miss G. E. Moss, the Beach, Aigburth, near Liverpool; Capt. W. Hornby, Knowsley Cottage, Prescott; Master G. J. Cargey, Sandon Farm, Stone, Staffordshire; J. B. Dixon, 48, Newtown Row, Birmingham; Master S. Swift, Southwell, Nottinghamshire. Commended, M. Marks, Edgbaston Street, Birmingham; J. Fletcher, Stoneclough, near Manchester.

GAME PULLETS (any variety).—Highly Commended, Miss E. Moss, the Beach, Aigburth, near Liverpool; J. P. Smith, Lower Wick, Worcester; the Hon. G. Howard, Charlton, Malmsbury, Wiltshire; H. Shield, Northampton; J. H. Braikenridge, Chew Magna, near Bristol; J. Heape, Acacia House, Ladypool Lane, Moseley, near Birmingham. Commended, Master G. J. Cargey, Sandon Farm, Stone, Staffordshire.

DORKING (Silver Grey).—*Chickens.*—Highly Commended, Right Hon. Lady Bagot, Blithfield Hall, Rugeley; W. Copple, Eccleston, Prescott. Commended, the Rev. J. F. Newton, Kirby-in-Cleveland, Yorkshire.

DORKING (Coloured, except Silver Grey).—Highly Commended, J. Drewry, Newton Mount, near Burton-upon-Trent. Commended, H. W. B. Berwick, Helmsley, Yorkshire; T. W. Hill, Heywood, near Manchester; J. Faulkner, Bretby Farm, Burton-upon-Trent; J. Shaw, Hunsbury Hill, near Northampton. *Chickens.*—Highly Commended, the

Right Hon. the Countess of Chesterfield, Bretby Hall, Burton-upon-Trent; the Lady Louisa Thynne, Muntham Court, Worthing, Sussex; the Rev. J. F. Newton, Kirby-in-Cleveland, Yorkshire; A. Potts, Hoole Hall, Chester; C. H. Wakefield, Malvern, Wells; B. Dain, Slade House, Erdington, Birmingham; H. W. B. Berwick, Helmsley, Yorkshire. Commended, J. Hill, Blandon Castle, Burton-upon-Trent; C. Sandiers, Coventry; A. Potts, Hoole Hall, Chester; J. Faulkner, Bretby Farm, Burton-upon-Trent; J. Smith, Henley-in-Arden.

DORKING HENS OF ANY VARIETY.—Highly Commended, Lady S. Desvœux, Drakelowe Hall, near Burton-upon-Trent; Mrs. F. Blair, Balthayock, Scotland; Miss A. M. Berwick, Helmsley, Yorkshire; Rev. F. Thursby, Abington Rectory, Northampton; W. Bromley, Acoc's Green, near Birmingham. Commended, J. Douglas, Ranton Abbey Farm, Stafford; D. Young, Radford Villa, Leamington; J. Heape, Acacia House, Ladypool Lane, Moseley, Birmingham; S. Burn, 1, East Terrace, Whitby, Yorkshire.

DORKING PULLETS OF ANY VARIETY.—Highly Commended, Mrs. Wilson, Clifton Cottage, Claverley, near Bridgnorth; Mrs. W. Bromley, Acoc's Green, near Birmingham; Miss A. Whittington, Wootton Waven, Henley-in-Arden; J. R. Smith, Metchley Cottage, Edgbaston, Birmingham. Commended, Miss A. Whittington; Rev. J. G. A. Baker, Old Warden, Biggleswade, Bedfordshire; Commended, J. Whittington, Wootton Waven, Henley-in-Arden.

DORKING (White).—Highly Commended, Rev. H. F. Hutton, Spridlington, Lincolnshire. *Chickens.*—Highly Commended, Rev. H. F. Hutton, Spridlington, Lincolnshire.

SPANISH.—*Chickens.*—Highly Commended, W. R. Bull, Newport Pagnell, Buckinghamshire. Commended, Mrs. Fowler, Prebendal Farm, Aylesbury; T. Boucher, Wellington Road, Birchfield near Birmingham.

SPANISH PULLETS.—Commended, J. Garlick, Hygeia Street, Everton, Liverpool.

COCHIN-CHINA (Cinnamon and Buff).—Highly Commended, H. Tomlinson, Balsall Heath Road, Birmingham. *Chickens.*—Highly Commended, Mrs. H. Bates, Harborne Heath Cottage, Edgbaston, Birmingham; Miss Fowler, Prebendal Farm, Aylesbury; Rev. G. Gilbert, Claxton, Norwich; Mrs. H. Bates; R. Chase, Moseley Road, Birmingham; G. C. Peters, 101, High Street, Birmingham; Master H. W. Tomlinson, Balsall Heath Road, Birmingham; Master E. C. Stretch, Marsh Lane, Bootle, Liverpool. Commended, H. Bates, Harborne Heath Cottage, Edgbaston, Birmingham.

COCHIN-CHINA (Brown and Partridge-feathered).—Commended, Mrs. Herbert, Powick, near Worcester. *Chickens.*—Commended, Mrs. Cartwright, Oswestry; Miss V. W. Musgrove, Aughton, near Ormskirk.

COCHIN-CHINA (White).—Highly Commended, W. Copple, Eccleston, Prescott. Commended, Mrs. Herbert, Powick, near Worcester. *Chickens.*—Highly Commended, Mrs. Herbert; N. F. Blair, Balthayock, Scotland; R. Chase, Moseley Road, Birmingham. Commended, Mrs. G. Lamb, Compton, near Wolverhampton; N. F. Blair.

BRAHMA POOTRA.—Highly Commended, Mrs. Craigie, the Woodlands, Chigwell, Essex; G. Botham, Wrexham Court, Slough, Buckinghamshire. *Chickens.*—Highly Commended, G. Botham. Commended, Mrs. L. T. F. Blair, Balthayock, Scotland.

POLAND (Black, with White Crests).—Highly Commended, Mrs. Robinson, Mansfield Woodhouse, Nottinghamshire; T. P. Edwards, Lyndhurst, Hampshire. *Chickens.*—Commended, T. Bat ye, Holmbridge, Holmfirth; T. P. Edwards.

POLAND (Golden).—Highly Commended, Mrs. Pettat, Ashe Rectory, near Basingstoke, Hampshire; J. Conyers, jun., 42, Boar Lane, Leeds.

POLAND (Silver).—Highly Commended, Mrs. Pettat, Ashe Rectory, near Basingstoke, Hampshire; W. Dawson, Selly Oak, near Birmingham. Commended, Miss C. Adkins, the Lightwoods, near Birmingham; G. C. Adkins, the Lightwoods, near Birmingham. *Chickens.*—Highly Commended, G. C. Adkins. Commended, Miss C. Adkins; T. Burgess, jun., Burleydam, Whitechurch, Shropshire.

HAMBURGH (Golden-pencilled).—*Chickens.*—Highly Commended, E. A. Wilkinson, 103, Newhall Street, Birmingham. Commended, Mrs. W. Kershaw, Heywood, near Manchester; Messrs. Carter & Valiant, Poulton-le-Fylde, Lancashire; G. Woodcock, Hinckley, Leicestershire.

HAMBURGH (Golden-spangled).—Highly Commended, J. W. Cannan, Bradford, Yorkshire. *Chickens.*—Highly Commended, S. H. Hyde, Taunton Hall, Ashton-under-Lyne. Commended, W. Kershaw, Heywood, near Manchester.

HAMBURGH (Silver-pencilled).—*Chickens.*—Highly Commended, T. Dale, Middlewich, Cheshire. Commended, D. Harding, Middlewich, Cheshire.

HAMBURGH (Silver-spangled).—Highly Commended, Miss E. Cannan, Bradford, Yorkshire. *Chickens.*—Highly Commended, the Right Hon. the Countess of Dartmouth, Patshull, near Wolverhampton; Miss Munn, Heath Hill, Stacksteads, near Manchester. Commended, Mrs. R. Teebay, Fulwood, near Preston, Lancashire; Miss M. E. Cargey, Sandon Farm, Stone, Staffordshire; R. E. Ashton, Limefield, near Bury, Lancashire.

MALAY.—Highly Commended, Miss C. H. Ballance, 5, Mount Terrace, Taunton, Somersetshire; J. Rumsey, 182, High Street, Shadwell, Middlesex. Commended, A. G. Brooke, Cumberland Street, Woodbridge, Suffolk. *Chickens.*—Highly Commended, N. Sykes, jun., 20, Globe Road, Mile End, London, E. Commended, C. A. Ballance, 5, Mount Terrace, Taunton, Somersetshire.

BANTAMS (Gold-laced).—Highly Commended, H. D. Bayly, Ickwell House, near Biggleswade, Bedfordshire; T. Masser, Sunbridge, Bradford; M. Leno, jun., the Pheasantry, Markyate Street, Hertfordshire.

BANTAMS (Silver-laced).—Highly Commended, L. Peters, Moseley, near Birmingham; I. G. Park, Moresby, Cumberland; L. Peters.

BANTAMS (White).—Highly Commended, H. Bayly, Ickwell House, near Biggleswade, Bedfordshire; F. Hardy, the Prince of Wales Inn, Bowling Old Lane, Bradford.

BANTAMS (Black).—Highly Commended, L. Peters, Moseley, near Birmingham; N. Sykes, jun., 20, Globe Road, Mile End, London, E.; J. Billyeald, Hyson Green, near Nottingham; J. Bradwell, Southwell, Nottinghamshire.

GAME BANTAMS (Black-breasted Reds).—Highly Commended, H. D. Bayly, Ickwell House, near Biggleswade, Bedfordshire; R. Swift, South-

well, Nottinghamshire; J. Camm, Farnsfield, Southwell, Nottinghamshire; I. Thornton, High Street, Heckmondwike, near Leeds.

GAME BANTAMS (Duckwings).—Highly Commended, Mrs. R. Hawksley, Southwell, Nottinghamshire; J. Camm, Farnsfield, Southwell, Nottinghamshire; Mrs. Sheild, Northampton; W. Silvester, 16, New Market, Sheffield; J. Tailby, Hill Street, Birmingham.

GAME BANTAM COCKS.—Highly Commended, H. D. Bayly, Ickwell House, near Biggleswade, Bedfordshire; W. Silvester, 16, New Market, Sheffield; Master R. Swift, Southwell, Nottinghamshire; Master W. Moss, the Beach, Aigburth, Liverpool; H. Bates, Harborne Heath Cottage, Edgbaston, Birmingham; R. Hawksley, jun., Southwell, Nottinghamshire.

GEESSE (White).—Highly Commended, E. Herbert, Powick, near Worcester.

GEESSE (Grey and Mottled).—Highly Commended, Mrs. Seamons, Hartwell, Aylesbury; C. Baker, Beaufort Street, King's Road, Chelsea; B. Baxter, Elslack Hall, near Skipton, Yorkshire.

DUCKS (White Aylesbury).—Highly Commended, Miss E. A. Fowler, Prebendal Farm, Aylesbury; T. W. Hill, Heywood, near Manchester. Commended, — Seamons, Hartwell, Aylesbury; Mrs. W. Kershaw, Heywood, near Manchester; J. Weston, Aylesbury.

DUCKS (Rouen).—Highly Commended, Rev. T. L. Fellowes, Beighton Rectory, Acle, Norfolk; Mrs. C. Browne, Withington, near Shrewsbury; R. E. Ashton, Limefield, near Bury, Lancashire; T. Robinson, the Gill, Ulverstone; G. Datt, Halloughton, Southwell, Nottinghamshire. Commended, Mrs. C. Browne; C. Hopkins, Newton Regis, Tamworth; E. Longton, Woolton Hill, near Liverpool.

DUCKS (Black East Indian).—Highly Commended, T. Masser, Sunbridge, Bradford; S. Burn, 1, East Terrace, Whitby, Yorkshire; Master C. A. Ballance, 5, Mount Terrace, Taunton, Somersetshire; F. W. Earle, Edenhurst, Prescott, Lancashire; J. W. Smith, Oundle, Northamptonshire. Commended, F. W. Erle.

DUCKS (any other variety).—Highly Commended, the Hon. Mrs. Colville, Lullington, Burton-upon-Trent; D. Bayly, Esq., Ickwell House, near Biggleswade, Bedfordshire; E. Stansfield, Manor Street, Bradford. Commended, the Lady L. M. Paulet, Amport St. Mary's, Andover; the Executors of the late Mr. Joseph Sarge, Birmingham.

TURKEYS.—Highly Commended, the Most Hon. the Marchioness of Winchester, Amport St. Mary's, Andover; the Right Hon. Lord Viscount Hill, Hawkstone, Shrewsbury; Lady Brinckman, Sundorne Castle, Shropshire; Mrs. C. Browne, Withington, near Shrewsbury. Commended, Rev. T. L. Fellowes, Beighton Rectory, Acle, Norfolk.

TURKEYS.—Highly Commended, Mrs. C. Browne, Withington, near Shrewsbury; Mrs. Beech, Brandon Lodge, Coventry; J. Beasley, Brampton House, Northampton. Commended, Rev. T. L. Fellowes, Beighton Rectory, Acle, Norfolk.

CLASSES FOR SINGLE COCKS.

DORKING.—Highly Commended, The Most Honourable the Marquis of Winchester, Amport St. Mary's, Andover; Mrs. Stow, Bredon, near Tewkesbury; the Right Hon. Lord Stanhope, Brethby Hall, near Burton-upon-Trent; Mrs. Wakefield, Malvern Wells, Worcestershire; Mrs. Wilson, Clifton Cottage, Claverley, near Bridgnorth; Rev. F. Thursby, Abington Rectory, Northampton; Rev. E. Cadogan, Walton Parsonage, near Warwick; Miss S. Perkins, the Cottage, Sutton Coldfield; E. Herbert, Powick, near Worcester; G. Chadwin, Tollard Royal, Salisbury, Wiltshire; W. J. Drewry, Newton Mount, near Burton-upon-Trent; J. D. Hewson, M.D., Coton Hill, Stafford; W. Copple, Eccleston, Prescott; J. R. Smith, Metchley Cottage, Edgbaston, near Birmingham; J. Whittington, Wootton Wawen, near Henley-in-Arden. Commended, Mrs. Arkwright, Spondon House, Derby; Lady Lousia Thynne, Muntham Cour, Worthing, Sussex; Mrs. W. Bromley, Acock's Green, near Birmingham.

SPANISH.—Highly Commended, Mrs. Stow, Bredon, near Tewkesbury; T. Boucher, Wellington Road, Birchfield, near Birmingham; T. Robinson the Gill, Ulverstone; J. H. Peck, Wigan.

COCHIN-CHINA.—Cartwright, Oswestry; W. Copple, Eccleston, Prescott. Commended, E. Musgrove, Aughton, near Ormskirk.

BRAHMA POOTRA.—Highly Commended, R. W. Fryer, Hinton Road, near Hereford. Commended, C. Dain, Southampton; R. W. Fryer.

POLAND.—Commended, Mrs. G. C. Adkins, the Lightwoods near Birmingham.

HAMBURGH (Silver-pencilled).—Highly Commended, W. H. Hancock, Winson Green House, near Birmingham. Commended, D. Harding, Middlewich, Cheshire.

HAMBURGH (Silver-spangled).—Commended, H. Beal, Wexham, Slough; T. Dale, Middlewich, Cheshire; Miss M. E. Cargey, Sandon Farm, Stone, Staffordshire.

GAME (White, Piles, Duckwings, and other Varieties, except Reds).—Highly Commended, Miss E. Moss, the Beach, Aigburth, near Liverpool; Rev. F. Tearle, Kettering, Northamptonshire; R. R. Clayton, Hedgerley Park, Slough; H. Lowe, Comberford Lodge, near Tamworth; C. Lucas, Wigginton, near Tamworth. Commended, H. Worrall, Spring Grove, West Derby, near Liverpool.

GAME (Black-breasted Reds).—Highly Commended, Miss E. Moss, the Beach, Aigburth, near Liverpool; Master R. Swift, Southwell, Nottinghamshire; H. Horton, Albert Cottage, St. John's, Worcester; R. Woods, Osberton, Worksop, Nottinghamshire; W. Dawson, Selly Oak, near Birmingham.

GAME (Brown and other Reds, except Black-breasted).—Highly Commended, E. T. Archer, Malvern; J. Fletcher, Stoneclough, near Manchester. Commended, J. B. Dixon, 48, Newtown Row, Birmingham; Master W. Moss, the Beach, Aigburth, near Liverpool; G. Baker, Grendon, Atherstone.

SWEEPSTAKES FOR GAME COCKS.

Highly Commended, J. Hindson, Barton House, Everton, Liverpool; J. Fletcher, Stoneclough, near Manchester; Miss E. Moss, the Beach, Aigburth, near Liverpool; Messrs. Carter & Valiant, Poulton-le-Fylde.

PIGEONS.

A Silver Cup or other Article of Plate, of the value of Five Guineas, will be awarded for the best three pens of *Almond Tumblers, Carriers, and Pouters*.—CUP, P. Eden, Cross Lane, Salford (Almond Tumbler, Carrier, and Pouter or Cropper). Highly Commended, F. T. Wiltshire, Derby Terrace, Croydon, Surrey.

A Silver Cup or other Article of Plate, of the value of Five Guineas, will be awarded for the best three pens of any other varieties than *Almond Tumblers, Carriers, and Pouters*.—CUP, J. T. Lawrence, Liverpool (Owl, Jacobin, and Barb).—Highly Commended, Mrs. J. Baily, jun., 113, Mount Street, London, W.

CARRIERS.—First and Second, Messrs. Siddons & Sons, Aston New Town, Birmingham.

ALMOND TUMBLERS.—First and Second, M. Rake, Brandon Hill, Bristol. Commended, F. C. Esquilant, 346, Oxford Street, London. Miss M. Cannan Bradford, Yorkshire. (Pen disqualified, the hen being beautifully dyed.)

BALDS.—First, F. C. Esquilant, 346, Oxford Street, London. Second, J. W. Edge, Aston New Town, Birmingham.

BEARDS.—First, M. Rake, Brandon Hill, Bristol. Second, J. W. Edge, Aston New Town, Birmingham. Commended, W. Coleman, Kingsbury Hall, Tamworth.

JACOBS.—First, F. C. Esquilant, 346, Oxford Street, London. Second, F. Mewburn, jun., Larchfield, Darlington. Highly Commended, Mrs. M. Marks, Wellington Road, Edgbaston, Birmingham. Commended, W. Taylor, 241, Shales Moor, Sheffield.

FANTAILS.—First, J. W. Edge, Aston New Town, Birmingham. Second, W. Taylor, 241, Shales Moor, Sheffield. Highly Commended, J. Baily, jun., 113, Mount Street, Grosvenor Square, London, W.; W. Taylor; W. H. Goore, jun., Aigburth Vale, Liverpool (Indian variety). Commended, J. Baily, jun.

TRUMPETERS.—First, M. Rake, Brandon Hill, Bristol. Second, F. Mewburn, jun., Larchfield, Darlington. Highly Commended, W. H. C. Oates, Besthorpe, Newark.

POWTERS OR CROPPERS.—First, P. Eden, Cross Lane, Salford. Second, M. Rake, Brandon Hill, Bristol. Extra Second, Miss M. Cannan, Bradford, Yorkshire. Highly Commended, T. Ridpath, Poplar House, Rusholme, Manchester. Commended, Miss M. Cannan.

MOTTLED TUMBLERS.—First, Miss F. Marks, Wellington Road, Edgbaston, Birmingham. Second, W. H. C. Oates, Besthorpe, near Newark. Commended, F. C. Esquilant, 346, Oxford Street, London.

OWLS.—First and Second, C. E. Rake, Brandon Hill, Bristol. Very Highly Commended, T. Ridpath, Poplar House, Rusholme, near Manchester; Miss M. Cannan, Bradford, Yorkshire. Highly Commended, T. T. Barker, Charnock, near Chorley, Lancashire. Commended, T. Ridpath, Poplar House, Rusholme, Manchester; W. H. Goore, jun., Aigburth Vale, near Liverpool.

NUNS.—First, S. Dicken, the Lozells, Birmingham. Second, T. T. Parker, Charnock, near Chorley, Lancashire.

TURBITS.—First, T. T. Parker, Charnock, near Chorley, Lancashire. Second, C. E. Rake, Brandon Hill, Bristol.

ARCHANGELS.—First, T. T. Parker, Charnock, near Chorley, Lancashire. Second, S. Dickin, the Lozells, Birmingham. Commended, T. T. Parker.

BARBS.—First, P. Eden, Cross Lane, Salford. Second, C. E. Rake, Brandon Hill, Bristol. Commended, G. Goore, Aigburth Vale, near Liverpool.

RUNTS.—First and Second, Mrs. C. Baker, Beaufort Street, King's Road, Chelsea.

DRAGONS.—First, Miss F. Marks, Wellington Road, Edgbaston, Birmingham. Second, W. Squire, Hanwell, Middlesex. Commended, Mrs. M. Marks, Wellington Road, Edgbaston, Birmingham.

ANY OTHER NEW OR DISTINCT VARIETY.—First, Mrs. J. Baily, jun., 113, Mount Street, London, W. (Bagadotte). Second, W. H. C. Oates, Besthorpe, near Newark (Blue Shield). Commended, Mrs. Button, Amport St. Mary's, Andover, Hampshire (Frillback); Mrs. F. Mewburn, jun., Larchfield, Darlington (Swallow); J. Baily, jun., 113, Mount Street, Grosvenor Square, W. (Swallow and Priest).

BATH AND WEST OF ENGLAND POULTRY SHOW.

IN the report of the Poultry Show at Dorchester in the Society's Journal, by S. Pitman, Esq., the Steward, there are many matters interesting to exhibitors. For instance: "Much difficulty and disappointment have arisen from amalgamating the classes Gold and Silver Hamburgs; still, when it is considered that only three or four entries are annually made, it must be obvious that the union becomes financially a necessity. At a future Exhibition an attempt may be again made to give separate prizes, but their continuance will depend upon exhibitors supporting the classes." As many complaints have been made of these varieties being obliged to compete together, I hope at Truro next June a sufficient number will compete to warrant the Steward in continuing this important alteration. Again: "For the future improvement of this department, exhibitors generally have urged the importance of increasing the amount of the second prize. The perfection now acknowledged to be attained by certain breeders deters entries of very good specimens for the cup, and the small amount of £1, with a 5s. 6d. entry-fee to be deducted, makes it of little value to contend for

the second prize. The Steward considers this point well worthy the consideration of the Council." This will be a great improvement, and with the recommendation of the Steward no doubt the Council will adopt it. The present prizes in each adult class are—First Prize, £4; Second Prize, £1; Third Prize, 10s. I would suggest—First Prize, £3; Second Prize, £2; Third Prize, £1. Also, in the chicken classes, the entry-fee is the same—viz., 5s. 6d., but the prizes are only First Prize, £1; Second Prize, 10s.; Third Prize, 5s. So the winner of the third does not even get his entry-fee. I consider the Bantam fee of 4s. is quite sufficient for the chickens. Moreover, the prizes for Bantams are higher, although the entry-fee is lower. With such an obliging Steward as Mr. Pitman, who listens to and carefully weighs any suggestions for the improvement of this first-class, and almost only Show of the West of England, it will, undoubtedly, become second to none. The Society are obliged every year to make complaint of the unsuitable baskets used for the conveyance of poultry, and this year there is only a slight improvement. Surely exhibitors for their own sakes will pay attention to this next year. The Society would do well to pay the prize money earlier next year.—W. R. E.

EGGS IN WINTER.

IN reference to the inquiry in the *Prairie Farmer* of the 18th of October, "How is my wife going to get eggs enough this winter to settle my coffee?" we will state that several means have been attempted to arouse hens from their torpidity when they cease the natural period of the year to lay, inasmuch as it seems very hard to pass through the winter without the luxury of eating new-laid eggs; and hence the importance of the question, "How is my wife going to get eggs enough this winter to settle my coffee?" Now, the most practical mode that occurs to the writer would be to procure early spring-hatched chickens—the Asiatic breed are generally the best winter layers—and keep them in a warm, dry place, and if fed plentifully and attended to they will generally commence laying about the 1st of November, sometimes earlier. In cold and damp this is not to be expected, and much may in different seasons depend on the state of the weather and the condition of the birds. A poor, half-starved hen cannot be expected to lay eggs.

There seem naturally two seasons of the year when hens lay—early in spring, and afterwards in summer—indicating that if fowls were left to themselves they would, like wild birds, produce two broods in a year. A wild hen will lay no more eggs than she can conveniently cover, and her periods for laying and incubation will be fixed and regular. Not so with the domestic hen: for some lay every day, or every other day, for nine months out of the twelve, and some varieties evince a desire to sit; while others manifest this desire, some at one period, and others at another period. Among a flock of hens these diversities will show themselves, and advantage may be taken of them with benefit to their owner. But they require as a condition that they be well provided with warm, dry, comfortable lodging, clean apartments, plenty of food—such as boiled potatoes, mashed and given to them warm, corn, barley, buckwheat, oats, and occasionally animal food. In summer, they get their supply in the form of worms and insects when suffered to run at large. It will be found that the fecundity of the hen will be increased or diminished according to the supply of animal food furnished.

It is well known that hens are modest birds, and seek privacy while the symptoms of approaching egg-labour are strong upon them. It is thought by many that the production of eggs is like the yielding of milk in a cow—somewhat under the control of the creature; so it becomes us to add every inducement to stimulate the instinct of nature, and coax fowls to prolificacy by consulting their tastes and whims by making their nests as secret as possible.

Hens moult and cast their feathers once every year, generally commencing in August, and continuing until November, and in some cases still later. It is the approach, the duration, and the consequences of this period which put a stop to their laying. All the period while it lasts, the wasting of the nutritive juices prepared for the blood for promoting the growth of the feathers is considerable, and hence it is no wonder there should not remain substance enough in the body of the hen to cause her egg to grow. Old hens, therefore, cannot always be depended on for eggs in winter, they scarcely being in full feather before

the middle of December; and they probably may not begin to lay till March or April.

As pullets do not moult the first year they commence laying before the older hens, and by attending to the period of hatching eggs may be produced during the year. An early brood of chickens, therefore, by being carefully sheltered from cold and wet, will begin to lay in the fall or early winter.

An ordinary breed of hens, well housed, well fed, and well cared for, will be of more profit to their owners than a like number of neglected, half-starved biddies, which may come of the best laying tribe.

We have been abundantly supplied with fresh eggs in winter to settle *our coffee* from the African Bantam hens, when managed in accordance with what we have recommended. We want to be told how to make hens lay for everlasting.—C. N. BEMENT.—(*Prairie Farmer*.)

RICE AS FOOD FOR POULTRY AND PIGS.

IN the Number of THE COTTAGE GARDENER, dated the 27th November, I notice a paragraph headed "Rice as Food for Poultry," and your remarks upon the same. You say that "Rice is pure starch, and incapable of producing fat in any animal. Fowls kept upon it become thin and low in condition."

Now, I have been in the habit for some years of using rice and ricemeal boiled, for the purpose of feeding Pigs, fowls, Ducks, and Geese, and have used very little or nothing else (certainly without any other kind of grain or meal) with it, and my Pigs and poultry always get fat upon it. Last winter and the winter before my fowls produced me quantities of eggs, when my neighbours' had none. My Geese laid and hatched long before my neighbours, and also reared their produce, fed upon boiled rice, while my neighbours have been very unfortunate.

I never had a fowl that went blind, and I have kept them in town and country.

The flesh is excellent, and my pork and bacon are always of first-rate quality, and the people who buy it once are always glad to have it again.

These results I have always put down to the use of rice and ricemeal; and knowing these results, you may judge of my great surprise at your remarks, which are so very much opposed to my own views and experience in the matter.—J. M. P., *Lowton*.

[What is the "little or nothing" which our correspondent gives his poultry and Pigs with the rice? If he gives them milk, or wash from the kitchen, or boiled potatoes, or cabbage, or turnips, he supplies them with fat-forming food. Rice will supply flesh. If a Pig or a fowl were kept scrupulously upon nothing but rice and water they would not fatten, or animal chemistry is teaching an erroneous doctrine. Poultry running about in a field or yard obtain enough of animal food, in the form of insects, &c., to add fat to the flesh formed from the rice.—EDS. C. G.]

BLUE ROCK PIGEONS.

IN THE COTTAGE GARDENER of the 4th inst., I notice the following:—"The common Blue Roc is the best; it is prolific, very hardy, and inexpensive." You will excuse my differing from you, and offering a correction.

The Blue Rock Pigeon is not very common, but may be met with on most of our rocky coasts, and breeds, I believe, but twice in the season.

The Pigeon you allude to is most likely the common chequered Dovehouse Pigeon, which is sometimes incorrectly called a "Blue Rock." This bird is prolific and inexpensive, but the young are small.—B. P. BRENT.

[We spoke of the common blue Dovehouse Pigeon, under its popular name of "Blue Rock." Of course we did not intend the wild "Blue Rock Pigeon."—EDS. C. G.]

INFLUENZA IN PIGEONS.

THE birds first are taken (both young and old) with moping, which after a day or two turns into a slight snuffle, which becomes worse and worse, until it gets something like a bad head cold, for which so far I have found no cure. Those

that have been affected long have become thin, and evidently are suffering from something wrong with the bowels, the vent being continually inflamed and clotted. Their diet is chiefly Indian corn, with a handful of hemp, and spring water with plenty of gravel.—B. R., S. J. M.

[When the Pigeons are first ill, give a quillful of castor oil, or some pills of pork fat; afterwards wash the head, mouth, and nostrils with a solution of borax. I should advise that no more hempseed be given to them, and let the Indian corn be changed for small hard beans. Let the Pigeons have lime in some form, as crushed oyster shells, broken chalk, or old mortar; an occasional lettuce to peck will also be beneficial.—B. P. BRENT.]

THE CANARY AND THE BRITISH FINCHES.

(Continued from page 84.)

4.—THE LINNET (*Eringilla Linota*).

German, der Hänfling.

French, la Linotte.



GREY LINNET.

Of all our native Finches the Linnet approaches nearest to the Canary. It is a common and well-known bird, much prized for its song, and is known under a variety of names, as Common Linnet, Grey Linnet, Rose Linnet, and Red Linnet—names given to it in accordance with its colours. The prevailing colour of the plumage is greyish-brown, darker on the upper parts, and inclining to whitish beneath. The quill-feathers of wings and tail approach to black, having white edging at their lower parts. The male and female differ somewhat in the shade of colour: thus, even in the nest the young cocks may be selected from the hens by the redder or more rust-brown shade on their backs. When older the cocks will be found to have more white on the edges and base of the quill-feathers of wings and tails.

The sexes are further distinguishable in the adult state by the red colour of the cock's breast, which is of a bright rosy red. In autumn, when the birds are fresh moulted, this red colour is not very conspicuous, because the feathers are tipped with a band of a duller shade; but as winter wanes and spring advances, under that beautiful providence of the Creator, these little birds, not requiring so abundant a plumage in summer as in winter, these duller edges are gradually worn off, and the bird appears in his gayer or nuptial plumage. The beak of the cock also assumes a bluish tint. This change of plumage is common to many other birds.

Young Linnets brought up from the nest do not in confinement attain this red colour on the breast; and old-caught birds when they moult in confinement also lose the rosy breasts. Nevertheless, they are still easily distinguishable from the hens, as the lower parts of the feathers present a yellowish shade; whereas the breasts of the hens do not present this marking, but are more spotted with longitudinal dark spots almost running into stripes at the sides.

The adult male has also some shade of red or carmine on the feathers on the head above the base of the bill, from which cause it has sometimes been confused with the greater Redpole.

In the general marking and distribution of colour they closely resemble the wild Canary, except that the white in the tail and wings is wanting in the Canary, and the rust-brown on the back and rosy red of the breast and head of the Linnet are represented by olive green and yellowish in the Canary. In their natural habits they also bear much resemblance to that bird.

They build their nests mostly in gorse or furze bushes, and, where these fail them, in almost any bushy shrubs. The nest is composed of roots, wool, dry grass and leaves, and lined with fine roots and hairs. They lay from four to six bluish-white

eggs, spotted with light brown and dark specks. The young are hatched in fourteen days. They feed on seeds and frequent the stubbles and waste places, destroying immense quantities of the seeds of weeds, such as kirk or wild mustard, plantain, chickweed, shepherd's purse, &c., thus rendering much service to the agriculturist, though they are thought to cause some waste to the crops of turnip and rapeseed.

When intended to be reared by hand, they should be taken from the nest when about ten days old, or when the tail has begun to sprout. They may be fed on sopped bread mixed with maw seed (poppy seed), and a little hard-boiled egg.

Some persons use rapeseed; but if this is employed it should be first scalded and then well washed to deprive it of its pungency. Rapeseed, however, I regard as much too pungent and oily to be a wholesome food for birds in confinement. Hempseed, of which all birds are very fond, is also too fattening and exciting, and should only be used medicinally.

The young when hungry will stretch up their heads and gape open their mouths, when the food may be put in a small lump at a time by means of a flattened stick or cut quill. They require feeding often, and care must be taken that their food is never sour.

If intended to learn any tune, it should be whistled to them several times after each meal, or played to them on a flageolet or bird-organ, as directed for teaching Bullfinches, or they may be hung in company of any good singing birds to learn their song.

The Linnet is much prized for the readiness with which it learns the note of other birds. Bechstein mentions one he had that sung the Nightingale's song; and he also mentions one that was taught to speak a few words, but, he adds, not very distinctly.

In some of our large towns the Linnet fancy is carried to a great height. They are also taught the Woodlark's note, and when they sing it well are considered of much value. The Woodlark's song being considered so desirable, and that bird being so very difficult to keep through the moult, when the easily-kept Linnet performs well it is almost beyond price among fanciers.

Clubs, I believe, are formed in London and other towns where Linnet fanciers meet and show their birds for small prizes or bets. The birds to compete are brought forward, and umpires are appointed to score the number of "wheatings," and "fearings," which the competitors may utter. That bird which performs the best without introducing any of its natural notes, *chuck*, *chuck a chweé*, would be declared the winner.

The fanciers have also a manner of moulting their birds off at pleasure, or "getting them up," I think it is called. They are placed in a small cage in a warm cupboard, and fed highly on hempseed; as they get accustomed to the place and to find their food, the door is gradually closed till they are kept in darkness, when they moult off in about a fortnight, and are again gradually exposed to light, when they come out in a new plumage. Such, I am credibly informed, is the process.

Towards autumn Linnets congregate in large flocks and frequent the stubbles and waste lands. They rise and settle very much at one time, and when they have done feeding congregate on some trees and sing or twitter in chorus. When thus collected in large flights, the bird-catchers capture them in great numbers by means of clapnets and call-birds, and these are sold to the bird-dealers by the dozen. A fresh-caught cock Linnet costs from 4d. to 6d., the price rising according to the length of time they have been in a cage, and well "meated off"—that is, accustomed to feed on the seed offered them. At first they generally get a mixture of rape, linseed, and crushed hempseed, and after a time are used to rape and canary seed. For a continuance, I consider that canary seed is the best food, with an occasional treat of chickweed, shepherd's purse, and plantain. Not being a very active bird, but of rather quiet habit, they are apt to become too fat, which induces disease and ultimate death; though when kept in health they sometimes live from ten to fifteen years. In confinement their natural song is soft and mellow. Both the young reared from the nest and old-caught birds will pair and breed readily with the Canary. The hybrid produce, called Linnet Mules, are hardly to be distinguished from a common grey Canary, but are much prized as excellent singers, often singing a fancy song composed of the notes of all the birds that hang within their hearing.

At the Crystal Palace Show, November, 1859, two pied Linnet Mules were exhibited.

B. P. BRENT.

(To be continued.)

WEEKLY CALENDAR.

| Day of M'nth | Day of Week. | DEC. 18—24, 1860. | WEATHER NEAR LONDON IN 1859. | | | | Sun Rises. | Sun Sets. | Moon Rises and Sets | Moon's Age. | Clock afterSun | Day of Year. |
|--------------|--------------|----------------------------------|------------------------------|-----------|-------|-----------------|------------|-----------|---------------------|-------------|----------------|--------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | |
| 18 | Tu | Black duck comes. | 29.695—29.649 | deg. deg. | N. | — | m. h. | m. h. | m. h. | | m. s. | |
| 19 | W | EMBER WEEK. | 29.734—29.712 | 30—8. | S. | — | 5 af 8 | 50 af 3 | 43 10 | 6 | 2 55 | 353 |
| 20 | Th | White nun comes. | 29.796—29.453 | 31—07. | S. | — | 5 8 | 50—3 | 51 11 | 7 | 2 25 | 354 |
| 21 | F | St. THOMAS. | 29.316—29.229 | 36—32 | S. | — | 6 8 | 50 3 | morn. | 8 | 1 55 | 355 |
| 22 | S | Sun's declin. 23° 27's: | 29.532—29.494 | 47—26 | S.W. | .02 | 6 8 | 51 3 | 59 0 | 9 | 1 25 | 356 |
| 23 | SUN | 4 SUNDAY IN ADVENT. | 29.487—29.326 | 45—7 | S.W. | .01 | 7 8 | 51 3 | 8 2 | 10 | 0 55 | 357 |
| 24 | M | Orange-breasted goosander comes. | 29.105—28.988 | 44—29 | W. | .25 | 7 8 | 52 3 | 18 3 | 11 | 0 25 | 358 |
| | | | | 48—29 | S.W. | .08 | 8 8 | 52 3 | 29 4 | 12 | 0 b 5 | 359 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 44.6° and 33.6° respectively. The greatest heat, 57°, occurred on the 23rd, in 1857; and the lowest cold, 9°, on the 22nd, in 1855. During the period 121 days were fine, and on 110 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

As most of the operations here at this season are dependant on the state of the weather, but little can be added to previous instructions under this head. The great object should be to get the soil in as favourable a state as possible for the reception of the various crops that will be committed to it ere long. As the basis of success is in a great measure dependant upon a thorough system of drainage, no time should be lost in attending to this important point. As this kind of work can be best done when it is dry overhead, it would be well to attend to it in time. *Asparagus*, if the heat of the bed declines very much a slight lining may be added, but be careful that a brisk or strong heat is not produced, as a very gentle heat is sufficient for the purpose. *Endive*, take the advantage of a dry day to lay tiles over some in the open ground; take up a portion of the best, and lay it in a frame or shed as a reserve in case of a severe frost. *Radishes*, when sown in frames, to have air, if the weather will permit, as soon as they appear above ground, and on all favourable occasions. Look over the *root store* occasionally to see that nothing is going wrong.

FRUIT GARDEN.

The renewal of fruit-tree borders where the soil is worn out and impoverished is a very necessary operation at this season. Remove as much of the old soil as can be done without disturbing the roots, and supply its place with maiden loam. Manures, as they act as stimulants, to be avoided, more especially as they induce an over-luxuriant growth without a corresponding degree of fruitfulness. The heads of large orchard trees to be freely thinned, cutting out all branches that cross each other, and the shoots to be left sufficiently apart that light and air may have free access to them when the leaves are on.

FLOWER GARDEN.

Examine *Dahlia* roots; any that are rotting, to be removed. The operations here will now be merely confined to the routine of digging or trenching all vacant ground, leaving the surface as rough as possible; sweeping and rolling grass lawns and gravel walks, and affording protection to tender plants. Prepare soils, composts, and manures by frequent turnings. Advantage to be taken of unfavourable weather for out-door work to prepare a good stock of stakes and labels ready for use when wanted.

STOVE.

If there is any fear of a scarcity of bloom next May, a portion of the *Achimenes* and *Gloxinias* should be repotted at once, and placed in a warm part of the stove, choosing such as have been the longest at rest; also a few *Allamandas*, *Clerodendrons*, *Echites*, and *Dipladenias* for the same purpose.

GREENHOUSE AND CONSERVATORY.

If softwooded plants are to be wintered in good condition it is necessary to banish damp and insects by

the most available means. *Pelargoniums* to be kept rather cool and dry, giving whatever water may be necessary on the mornings of fine days; avoiding the use of fire heat, except when necessary to prevent the temperature falling below 40°, or to dispel damp when this cannot be safely done by giving air. *Calceolarias* and *Cinerarias* for late blooming to be also kept cool and airy, and to be accommodated with pot room when necessary. The *Calceolarias* to be narrowly watched for thrips, which, if seen, to be slightly smoked on two or three evenings successively to destroy them.

FORCING-PIT.

As soon as the plants are sufficiently forward in bloom they may be removed to the conservatory or drawing-room, and a succession of such plants as the following to be introduced, viz.:—*Azaleas*, *Persian Lilacs*, *Roses*, *Sweet Briars*, *Honeysuckles*, *Rhododendrons*, *Kalmias*, *Daphnes*, the more advanced *Hyacinths*, *Narcissuses*, *Tulips*, &c. Everything introduced here must have had previous attention to prepare it for forcing purposes, and to be well set with bloom-buds. Fire heat to be applied in moderation, especially at night, and on dark, foggy days; a pretty brisk fire heat may be applied on clear forenoons, when air may be admitted with advantage. A sweet bottom heat of 75° is necessary. W. KEANE.

NEW STYLE OF BEDDING.

LUCY TAIT VERBENA—GAZANIAS—CALYSTEGIA PUBESCENS.

LAST summer the Floral Committee had a good idea given them for a new style of flower-bed, in a contribution from Mr. Cunningham, gardener to the Bishop of London, at Fulham Palace.

Mr. Cunningham took up the idea himself from the style of growth exhibited by a seedling *Verbena* which he raised, and which he named *Lucy Tait*. This is a very dwarf, close-growing *Verbena*, with an upright style of growth, and less given to spread sideways than any other *Verbena* yet seen in the bedding sections of the race. There is nothing particular in the colour of this seedling—a light pink or rosy pink, and the trusses are small but come in great abundance, and very close together, and the chances are, that if the Committee had only seen cut flowers of *Lucy Tait* they would have taken no notice of them; but having seen a batch of the plant in its natural state they gave it a commendation prize, and endorsed Mr. Cunningham's estimate of its quality as an edging plant, and thus, in their united opinion, "we have nothing better in its class."

It is not so much on its merits as an edging plant, however, that I refer to *Lucy Tait*, but on account of the new style of bed which its flowers and habit offer to the notice of the planter. It is the first edging plant, that I recollect, the flowers of which may be of the same tint of colour as that of the plants which make up the bed round which it is edged, and yet retain the use and influence of an edging by the strong contrast of growth. Take the last rose or pink *Verbena* for a bed, and here is a pink or

light rosy Verbena with which to edge it. If it trailed in its growth like those in the bed, it could hardly be called a distinct edging, train it how you would; but as it is a close, upright grower and very dwarf, the contrast between it and those which fill the bed stamps it at once as an appropriate edging, although its flowers are of the same tint as the flowers in the bed.

Now, take any other family of bedders, and see if we can find another instance like that of Lucy Tait among them all, barring the Geraniums. What is the best Petunia to edge a Petunia-bed with, or is there one for that purpose, and how could it be managed? There is nothing of the kind which could be managed to pay for the trouble of doing. If you take the Calceolarias, I believe the same remark will hold good. You would need one of the original herbaceous Calceolarias, and a perpetual bloomer, to make an appropriate edging for a bed of any one of the present bedding kinds, unless you bed with those dirty black or foxy brown ones which few persons can look at or admire, and edge them with young plants of integrifolia—a sorry mixture, by the way, which is not likely to be approved of; for, unless there is a marked difference in the leaves, or flowers, or style of growth of an edging plant from the plants in the bed, the planting will look vulgar and out of fashion altogether.

In Geraniums alone can we find subjects to compare with the effects of Lucy Tait in their own sections. Scarlet Geraniums will make appropriate edgings to beds of scarlet kinds when their leaves are variegated; and pink, or purple, or any other shade of colours, will answer for beds of the same shades if the leaves of the edging plants are also variegated. The contrast is strong in the difference of the leaves, and that counterbalances the ill effects of all the flowers being of the same colour in an edged bed, just as the upright habit of Lucy Tait overcomes the sameness of pink and all pink in an edged bed of Verbenas. Recollect, however, that although I have put pink to pink, and purple to purple, with these differences of contrast, for argument's sake, it should never be done in actual planting if it can be avoided; and it is only among variegated plants, and more in keeping with variegated Geraniums, that such mixings are at all admissible in stylish gardening.

I have now in my possession, and in my mind's eye at the present moment, another plant which has never yet been proved as Lucy Tait has been—that is, to stand colour as an edging to the very same colour, and yet maintain a strong contrast between the bed and the edging of the bed. I have just said that it is against the fashion to plant Lucy Tait for an edging, to, say, Beauty Supreme Verbena, on account of the sameness of the colours, notwithstanding the strong contrast in the style of growth of the two Verbenas. My new edging plant has just the same degree of contrast in its growth with that of the plant round which I am going to recommend you to plant it, as Lucy Tait has with Beauty Supreme; and the colour of my two plants is much nearer alike than those of the two Verbenas, and yet I venture to hope, as I really believe, that my two put together in this way will make the best bed of all the new beds which will be tried in this country next season. My two plants are about the same age as the Horticultural Society of London; they had as many ups and downs, and as much rough usage from friends and Fellows; they have also been just reviewed, as if on purpose to vie with the splendences of Kensington Gore next season; and he that runs may see the contrast, and the splendence of my new bed at once, and never forget it, for the bed will be run over entirely with *Gazania splendens* as with a Defiance Verbena, and the edging will be as stiff and erect with *Gazania rigens* as with Lucy Tait. The colour will be the same across the whole bed, and yet the contrast will be more than that between a bed of the Crystal Palace Scarlet Geranium edged with Flower of the Day. If the summer of 1861 will be only

half as dry as was that of 1859, this will certainly be one of the best telling beds in England and the newest, although the plants are as old as Chiswick Garden. I shall be out at the elbows if this will not be the first planted bed next May at the Experimental Garden.

But where is *rigens* to be had in sufficient numbers to supply the hundreds who will enter the lists against the Black Knights, or measure a lance with Ivanhoe himself? There will be a good demand for two good old plants next spring, certain—the true *Gazania rigens* to edge the beds of *Gazania splendens*; for, now that the true *rigens* has turned up, and *splendens* is recovered to its long-lost admirers, the first can only be put round the second at their next meeting, because they are not both best—because the one, *splendens*, is a bedder, and spreads about like a Verbena; and the other, *rigens*, is not a bedder, or, at least, not of a bedder's habit, but that close, compact, and upright style of growth which caused the Floral Committee to recommend Lucy Tait Verbena as the best edging plant “in its class.” And no doubt but two and three-year-old plants of *Gazania rigens* will make the best edging plant in its own section, if not in the order of compound flowers, or composite flowers, as we say; and I must guard this country and kingdom from a sure and certain prejudice which cannot fail next summer from coming down upon *rigens* round the beds.

Rigens can only be had from little morsels struck in the spring, and they will not make much show the first season. *Splendens*, from the same amount of root strength, will grow six times faster than *rigens*, cover six times more ground than *rigens*, and produce ten times more flowers than *rigens*—that is, young *rigenses* struck that spring; but take up the old plants of *rigens* in the autumn, and do the like with the same plants of *rigens* the second year and the third season; after that divide the old plants of *rigens* every year in February, and never grow or strike a cutting from it for the rest of your days or mine, and you shall never want the best edging plant among composites; and the best way to plant it is three inches from the grass, and four inches apart all round the bed the first year, or that spring's cuttings. The second year let the centre of your *rigenses* stand just four inches from the grass or gravel, and six inches from centre to centre of plant all round the bed. Then, if you could think of it, and have your plants so divided yearly as to come up to that figure 4 from the grass, and to the other figure from centre to centre round the ring, you would take the shine out of bigger folks;—you might forget all that, and have their plants ever so big one year as to be a nuisance, or so little at another venture as to give the idea of poverty and starvation on the march round the beds. The best way to mind the thing is to call oneself No. 1, to say No. 4 from the side of the bed to the centre of the edging plant, and No. 6 to the distance from the centre of one plant to the centre of the next, or 1, 4, and 6, the three most useful figures in enumeration for a No. 1 flower gardener, as the same proportions between the selfs and the self-doings hold good over a hundred ways. From all this, or from the half or one-quarter of it, anybody can perceive the difference between *Gazania splendens* and *rigens* without even seeing the plants.

If *Gazania rigens* had been properly named in the first instance, no mistake could ever have happened between it and *splendens*. But there has been a spell on the whole family, to their prejudice, from their first appearance. Not one of them is rightly or appropriately named. *Rigens* ought to have been named *heterophylla*, because it is the only one of them which varies in the leaves on the same shoot or joint. Some and the greater part of the leaves of *rigens* are perfectly entire on the edges all round, and a few of them—that is, of the leaves of *rigens*, are lobed on the edges near the top, leaving two or three large teeth on each side of the leaf, and a long point beyond the teeth; but when the plant is much

cramped in a pot it gets a little sulky and keeps its leaves as tightly as possible to the plain simple blade.

Gazania uniflora was a daft and dotted name from the beginning, because every one of the *Gazanias* is a *uniflora* as well as the daft one. They all produce one flower at one time in one place, and that is the meaning of *uniflora*. *Pavonia* is just as far from the centre mark, and the rest of them are not nearer to it. Therefore, and for the sake of truth without bother, let all those who send us *Gazania* leaves send at the same time two or three joints off from the top of that shoot, and then a proper knowledge of *Gazanias* could decide all the kinds, except *uniflora* and *splendens*, without looking at them, but merely by passing them among the fingers. Recollect, also, that if your *Gazania* is a running or trailing plant, we must know if the flower is all plain yellow, or marked all round with a very pretty ring, because the best plantsman might be deceived in winter as to which was *uniflora* from *splendens*.

Turn over another leaf and see what has occurred this last season or two down in Lincolnshire. There the *Calystegia pubescens* trained up against a nine-foot-high wall has reverted again to its natural turn of complete singleness; and I have roots of this plant to see if there be any difference between it and the first which assumed the natural form. Here, then, the origin of one species, be it *sepium* or be it not, is arrived at by a very different route from that which my plant followed round the sides of the old tar-barrel. And the old question recurs again—Can we, or any of us, get this single form to take another turn of doubleness and come out in a form more in accordance with our ideas of a double *Convolvulus* than the Chinese *pubescens*? Just confine a few roots of the single form of the plant to a No. 16-pot or pots, and try them on different aspects for a few seasons, and see what that will do.

D. BEATON.

HEATING A BOILER BY A LAMP.

I HAVE a small greenhouse some 15 feet long by 5½ feet wide, and I am sadly perplexed how to heat it on some principle that will be inexpensive, and at the same time entail a minimum amount of trouble. I have duly noticed all that has been written in *THE COTTAGE GARDENER*, but none of the plans there detailed appear suited to my case. Hitherto I have used a small stove, but I am dissatisfied with it on many accounts. It is inefficient, and the dust and dirt it creates are a great nuisance. Within the last few days it has occurred to me, that to heat the house with hot water would be the most effectual plan, and entail less trouble in attendance than any other. I propose to effect this by means of a paraffin oil lamp (or some modification of one), which I would employ to heat a small sheet-iron boiler, of a form best adapted to economise and utilise the heat given out by the lamp. To this boiler I would affix a flow and return pipe, in connection with a tank extending round one or more sides of the house. I imagine a boiler of three or four quarts would be sufficiently large. I have no gas, otherwise it might be cheaper and more effectual. Be so good also, as to say what height from the floor the tank should be. The back and one end of the house are of brick.—AN AMATEUR.

[We are sorry to say that for such a house we have no faith in your proposed plan. We do not think it would be sufficient, economical, or attended with little trouble. To be sure, we do not know the size of the contemplated lamp, but if large you would require a chimney to go from it, and you will see a correspondent complains to-day of the soot. If the lamp would give you enough of heat by means of a mere tube from it, it certainly might be tried. Be assured, however, that though you may equalise the heat more, all your proposed arrangements of boilers and tanks will give you no more heat than what the burning of the wick and the oil will give out. We have known several such cases tried, and the owners were obliged at last to take to the stove or a small flue. We should like our readers to keep in mind, that whatever cleverness be shown in diffusing heat, we can get no more than a certain quantity from a certain quantity of fuel. We recollect an enthusiastic employer sending home a Joyce's stove and a bag of prepared fuel, and telling his gardener that

that stove was large enough to heat a good-sized greenhouse, and how he looked when told if made red-hot it would not do it; and what would the plants near it say to that, with no chimney or anything of the sort. We confess, however, we should have more faith in a stove with a chimney than with the lamp, if there was not some mismanagement with the stove. A little water judiciously used ought to have prevented the dust and the dirt. The lamp even if used carefully would also have its own discomforts. If a stove inside, however, were a discomfort, one might be made to be fed outside. A small furnace and boiler, like that engraved last week, and recommended by Mr. Allen, would do nicely if tanks were required. But in such a narrow house, were most heating mediums to be seen, would rather be in the way. Could a small furnace be made any where outside, that and a small flue below the floor, if the floor was not furnished or made with round earthenware pipes above it, would be the best plan. The iron stove inside would, however, be the most economical but not the safest. See what is said on flues and stoves in the current volume.]

WINTERING VINES IN A LATE VINERY.

I HAVE a lean-to greenhouse (south-west aspect), 20 feet long by 14 feet wide, heated by a brick flue along the front and both ends, three bricks on edge, covered with a tile and exposed for radiation two sides and top. I am anxious to grow Grapes, and have had five Black Hamburgh Vines, three years old, planted outside two years since, being now five years old. I have not attempted to fruit them yet. I propose to train them on the spur-system. Last year they were pruned to within a foot of the front light up the rafter, and this autumn I have cut another foot higher. In your last Number you condemn the practice of turning Vines out of doors in winter from a late vinery: hence my difficulty, as I have been led by a gardener who recommended me to do so. Wishing to make the most of my greenhouse, I grow Primulas, Camellias, &c., in winter. Finding my Vines began to break early last February, I was advised to turn them out to keep them back, which I did, fixing them under a board along the front, and they remained out, but quite dry, until the third week in April, as I did not wish to force them at all. Would it be as well to let the Vines remain inside and take their chance in early or late growth? But, if early, should I not have to keep up fire heat, which I should like to dispense with after March? The border is well drained and good compost, yet every lateral made this year has been mildewed—for weeks some have cankered off. I painted the flue with sulphur slightly, painted the Vines with Gishurst Compound, and ventilated well; but had no fire lighted from April to the middle of September. Now they are out they are a nice cinnamon colour and clean, the buds seem quite sound.

Can you help me so that I can grow Grapes and my flowers too—flowers both winter and summer? I was on the point of turning them out again but for your article aforesaid. I am afraid 45° minimum heat, winter and spring, will bring the Vines too forward to fruit and do well next season.—T.

[Your letter shows us that there is no general rule but admits of many exceptions; these exceptions in special circumstances, instead of contradicting, merely proving the rule. Thus we would lay it down as a general rule, that in houses devoted to Vines alone there is no necessity for taking the Vines out of the house; and in this rule and in these circumstances we would include all Vines that commenced their growth from December to the end of March. We would make an exception in the case of Vines that commenced growing in September, October, or even the first week in November. Taking these out, or by any other means keeping them cool and at rest after the wood was ripened, would be all in their favour. They would break more strong and regular in consequence.

We will, if possible, be more particular in our statements; because the simple inquiry "Why take Vines out of the house?" seems to have alarmed some half a dozen of amateurs, who have always been in the habit of taking them out of doors before commencing growing them. Now in all cases, with the exception alluded to, all Vines grown in a vinery for their own sake will be better and safer kept in than taken out of the house. Even there the wood may be ripened or rested at will, according as the sun is admitted or excluded.

We now take a step farther, and say that none of these Vines will be injured or unduly excited if plants are kept in the vineries

that may be kept safely in a temperature from fire heat of from 35° to 45°, but seldom rising above or even quite as high as 45° with fire heat alone. Thus, supposing that a vinery is pruned in the middle of October, and is to be started at Christmas-day you might fill the vinery with bedding plants—such as Verbenas, Calceolarias, Geraniums, and keep them perfectly safe, until you began to raise the temperature from 45° to 50°, which would be too much for the health of the bedding plants. Scarlet Geraniums and others would grow very well in a heat of from 50° to 55°; but if you wished to keep them merely safe and in small compass, the plants must be shifted to another place that is cooler than the vinery after you begin to force it. What you keep in it afterwards will be something that will suit the increased temperature, either in the way of flowering plants or such fruits and vegetables as Strawberries and Kidney Beans.

The same rule holds with Vines started in February or March or allowed to break naturally in April. The Vines are looked upon as the chief object, and the plants in the vineries made to suit what will best suit the Vines; and in all these cases, with the exception alluded to, the pulling of Vines out and in is a mere waste of labour, and also not without its involvements of danger.

In cases where a late crop of Grapes, and the preserving of the hardier house plants, and blooming them fairly in winter and spring are the chief considerations, there is no necessity for taking the Vines out of the house in winter; and it is often dangerous to take them out at an earlier period. Last September we noticed Vines taken out of a house, and tied to stakes in the front of it, that had received hardly any fire heat in spring or summer; and the leaves then were so battered with the weather and the wood so soft and spongy, that we felt a great mistake had been committed—and that merely to prepare the house for bedding plants and getting forward some Primulas and Cinerarias, which would have been as well accomplished with the Vines in as out, whilst they would have had the chance, by removing all laterals, of ripening their wood. These Vines were terribly injured by the frost of October—hardly a bunch was shown by them; mildew and other evils seized them wholesale; and as a last resource, they were cut down in June and a fresh commencement made with a selected strong shoot from each, which, from keeping under glass and giving fire heat in September and October, now promise well for next year. At the same time another house, used entirely as a greenhouse, the lights were nearly all slid down to give air to and harden the Vines, neither the wood nor the fruit of which was ripe. The sashes, as advised, were pulled up so as to give only the necessary amount of air, and a little fire heat was given to afford a drier atmosphere to ripen the fruit and wood too. The plants being kept out until the middle of October, and the Grapes then being all out, the Vines were pruned towards the end of the month, the stems tied in bundles along the front of the house; and though the house was never above from 40° to 45°, and seldom below 40°, all the winter, Cinerarias and Camellias, &c., came in after the Chrysanthemums, and the Vines began to swell only in the last days in March, and bore an excellent well-ripened crop this summer. If these Vines had been exposed to the open air like their neighbours, we should hardly have expected a bunch.

These refer, however, to premature exposings, but there are not wanting cases during the last season where the deficiency of the crops may be traced to pretty-well ripened wood being injured by the frost from being fully exposed to the weather out of doors. In all cases where it is deemed necessary that this exposure should be given, the stems should be at least kept dry, and in general the extreme of frost should also be avoided. I am convinced myself, that even roots of Vines near the surface were injured by the severe frost of October, 1859. On the whole then, considerable experience and observation lead me to conclude that Vines under glass in late houses will not start above a few days before the usual time, if the temperature in winter does not rise above from 40° to 45° from fire heat, and that under these circumstances the Vines are not benefited, but apt to be injured when exposed out of doors without protection. In such a night temperature, Primulas, Cinerarias, Cytisus, Coronillas, Epacris, and Camellias will open their blossoms pretty well if there is a fair amount of sunshine; but they will hardly do so in such dull weather as we have lately had. From sunshine we could allow 10° rise with safety.

Under such circumstances, however, as our correspondent's, where a *very gay* display is wanted in winter and spring—where to produce that display the minimum temperature is 45°, rising

we presume to 50°, and even a few more degrees at times, and a still greater rise of 10° or 15° more in bright sunny days, and where the Vines are required to produce late crops, and no fire if possible used from April to September—then all things considered, to attain these objects it will be best to take the Vines out in winter and keep them secure under protection until they begin to break. Such a house, in fact, is a *warm* greenhouse approaching a forcing-house in winter, and a cool vinery in summer, and must have corresponding rules and regulations of its own. Keeping such a house at from 45° to 50° and more, with air in proportion in sunshine, will secure more bloom than one kept at from 40° to 45°; and plants will do better under the Vines in summer than if the Vines had been commenced earlier and kept growing, for if once commenced there must be no stoppage or check given. As our correspondent asks how we would do in his position—we would say, treat the Vines as he proposes, and let them break naturally; but instead of not using a fire from March to September, and as mildew had made its appearance, we would have some flowers of sulphur on the flue, but never have the sulphur hotter than 160°, and then in a dull, cold day we would put a little brisk fire on which would permit of giving a little more air. This we would do, especially when the Vines were in bloom, and even afterwards—say, in August in a season like this; and then by September, if the weather was at all dull, we would put on a little fire to ripen the fruit and harden the wood; and since show of flowers is a great object, we would cut the fruit as soon as ripe, prune the Vines by the middle or end of October, dress them with a paint of clay and sulphur, and place the outside under protection for their winter quarters. Very likely a few firings in summer, in dull weather, would not only forward the crop but keep off all appearance of mildew.

One word more as to your postscript. Your Vines would have been most likely quite as strong now if they had been at least one year younger when planted. One thing, however, you have not injured them by over-bearing; and as the main stem is yet to be furnished for the spur-system, we would certainly advise that for the next season at least you would introduce your Vines by the middle of February, but this solely on the understanding that you keep them growing afterwards, giving what heat was necessary. This would prolong the time of growth for one season. By means of taking out the Vines, and having some in pots, some people have actually had three crops in a year out of such a house; but these are cases which, like yours making a forcing-house in winter—do not interfere with the general rule applicable to late vineries.—R. FISH.]

WOODWORK OF "THE CURATE'S VINERY."

WILL you inform an old subscriber what should be the thickness of wood used in the several parts of the "Curate's Vinery?" Also, what should be the depth from centre to apex in "Curate's Vinery," of 3 feet 6 inches on new plan? Also, what should be the thickness of glass used, and what will now be the required size of the pieces of glass, and whether it would not be better to use two narrow pieces instead of one very large one, the narrow pieces being made to overlap each other?

Might not tiffany placed on frames similar to those of "Curate's Vinery," be very useful for protecting early Peas in frosty nights?

What should be the distance between the two Vines planted in "Curate's Vinery," of 3 feet 6 inches in breadth.—X. Y. Z.

[The bars are one inch deep, and three-quarters of an inch thick, of ridge boards and eave boards 2 inches by 1 inch. The depth from centre to apex of the enlarged vinery (3 feet 6 inches wide at base) should be 20 inches. The glass should be 21 oz., as it is less liable to breakage in pruning, and for the same reason pieces 15 inches or so in width are to be preferred; but this is a mere matter of choice. Tiffany placed on the same species of frame as the "Curate's Vinery," would serve excellently well to protect early spring crops. The distance between two Vines in an enlarged vinery should be 14 inches.]

STOKE NEWINGTON CHRYSANTHEMUM SOCIETY.—The fifteenth annual dinner of this Society was held at the Falcon, Stoke Newington, on Thursday evening, Mr. Shirley Hibberd, the President, in the chair. In proposing the toast of the evening, the President announced his intention of offering at

the next exhibition a set of meteorological instruments, as a prize for the best collection of *Chrysanthemums* of varieties sent out within the last three years.

WINTER HEATHS NOT FLOWERING.

IN Vol. XVII., page 288, I see a classified list of *Heaths*, and in the class which should bloom in December, January, and February, I see *hyemalis* and *Wilmoreaana*. I have plants of these two from two feet and a half to three feet in height, and nearly as much through, and these are as yet showing no signs of flowering. I may tell you the treatment I have given. I bought the plants in flower, I think about the beginning of March. After flowering I pruned them, and kept them rather close for some weeks till they had made some growth, and then gave them a shift of one-size-larger pots, and kept them rather close again for some weeks longer, after which I gave them more air, and about the middle or between the middle and the end of July, I put them out to the north-east side of a hedge, where they only had the morning sun. I kept them here for some weeks, and about the middle of August I placed them on the south-west side of a hedge, fully exposed to the sun, the pots being placed inside larger pots. Sometime in October I removed them into the house. Healthier looking plants you could not desire to see than they are, the stems of last year's growth being from fifteen inches to eighteen inches in length, and stout and robust in proportion. I have another spring-flowering *Heath* (*Andromedæflora*) which had the same treatment, and it is at present all over flower-buds.—J. M., *Lanarkshire*.

[You have treated your *Heaths* exactly as we should have done, only the season being so sunless they would have been better to have had more light. The *Andromedæflora* is a weaker-growing plant, and the wood would be sooner perfected. We trust that the others will bloom before March.]

THE CONSTRUCTION OF ORCHARD-HOUSES.

I AM glad my paper on the orchard-house has drawn an answer from Mr. Rivers. My object in writing was to provoke discussion and elicit truth. As I take *THE COTTAGE GARDENER* in monthly parts I have only just seen my friend's paper. Mr. Rivers says "my cultural directions are all good;" he, however, hands in a good bill of exceptions, to some of which I wish to reply.

I have, it is true, not seen his last house; from his description it must be a fine one, and I will take an early opportunity of seeing it. But I think Mr. Rivers will allow he has gradually progressed in his ideas of house-building from his first "glass sheds," (I am sorry this expression is not approved of), with a hedge for the back, to a boarded house with a glass roof, "the ventilation through the boards of which was so perfect," to his winter garden, 100 feet by 24, which is anything but a glass shed—in fact, a fine house from his description, with glass sides and ventilation at command. So go-a-head a man will come at last to a brick foundation, iron posts, or something equally substantial. We are all indebted to Mr. Rivers for teaching how a glass house may be erected at a less cost than the absurd prices formerly charged: he has worked hard and paid for information, and we all have the advantage. My reason for taking up the subject was that I saw many houses erected in accordance with ideas since exploded which did not answer their purpose, and wished to show that now experience taught that an orchard-house was not a glazed shed. I still think five or six courses of brickwork laid in Portland cement a much better foundation than oak posts, even where oak is to be procured cheaply.

The larger the house the less it costs per square foot. Mine with raised beds of brickwork cost 1s. 8d. per square foot covered; Mr. Rivers', without beds, 1s. 2d.—one covering 1200 square feet, the other 24,000. If his house is not a very good one, I shall think mine, considering its size and stability and raised beds, nearly if not quite as cheap, though costing more money.

As to Pears, let those grow them who have plenty of orchard-house room. If they require to be turned out of doors to ripen they can hardly be called orchard-house trees. Because two Pears this sunless season proved good in an orchard-house it is no proof they are worth growing under glass. I can only

repeat ours were inferior to those grown out of doors. The same remarks will apply to Plums, though they are more satisfactory than Pears with us. Till I built an orchard-house, like Dr. Johnson I never knew what it was to be satisfied even with wall Peaches; since becoming acquainted with orchard-house Peaches my respect for the family makes me unwilling to accommodate them with plebeian Pears and Plums. If these latter will but vacate their quarters in time we might ask a temporary shelter till the danger of frost is passed.

The soil here used for fruit trees is a strong loam. If it were lighter we should have found no inconvenience from its having been made so solid in the operation of potting.

I was not aware the copper aphid was easily killed by fumigation; if it is, it will require a well-constructed house to render this mode of destruction a cheap one. A boy with his brush kept ours perfectly clean with very little expenditure of time; but then they were never neglected a day whilst in flower. When I said twenty-five Peaches were enough to leave on a tree in a pot I did not contemplate pots six feet in circumference, but ordinary pots twelve inches in diameter. I have had forty really fine Peaches on a tree this year, but where fine quality is required would prefer less; and if I wanted to impress any one with the superiority of orchard-house Peaches, I would not present one gathered from an overloaded tree. If roots grow through the bottom of the pots and are cut off level, I am at a loss to imagine how they can fail to fill the drainage-holes. They certainly have done so here in several cases; besides which, our best Peaches this season were produced on plants which had never penetrated the border.

With regard to manure water, I think there is great difference between manure mixed in water and urine from a cow-house: the latter I should be frightened at. Ours was made from manure gathered in the field; and I had a pot *Rose* watered twice a-week to see if it could be injured before using it for Peaches. It answered so well that I much prefer it to manure placed on the surface of the pots, which does not look very well: but let each try and judge for himself.

Lastly, I see my unkind remarks against the poor lean-to house have raised a nameless champion. It appears that a well-built house twenty feet wide is not warm enough nor safe from frost, unless it has a back wall to absorb heat during the day and radiate heat at night. Never having lived in such a climate, I cannot tell how necessary it may be to build in this horribly ugly fashion. A man who would recommend a lady to build a greenhouse in this way, and put up a high stage, must have a monkey's notions of the pleasures of climbing. I have already shown why it appears to me so bad a mode of building an orchard-house.—I. R. PEARSON, *Chilwell*.

POTTED FRUIT TREES IN AN ORCHARD-HOUSE.

I SEND the enclosed interesting note as bearing on the culture of fruit trees in pots lately discussed in your pages, and on the culture of Pears and Apples in an orchard-house, feeling assured you will think it worthy of a place in your columns.—T. R.

"Dear Sir,—I cannot resist the pleasure of again writing to you on the subject of orchard-houses, and growing fruit of all kinds in pots.

"I am charmed with it. It embraces all that a gentleman can require, however large or small his family.

"My house is not a large one, but sufficiently so to grow fruit and flowers for myself and friends. It is 50 feet by 20 feet, and having flowers in it all the winter, I ran a four-inch pipe round it last year; the consequence was, that from June until September I had fruit to offer my friends, who were not backward in availing themselves of the opportunity, as it is well known how worthless all out-door fruit was. Whereas, I may in truth say, that the Peaches and all other happy inmates of my house were of fine flavour and size, and well coloured. Some of the trees were pictures of beauty, and I will give you from my gardener's notes a few particulars of quantities.

"An *Elruge* Nectarine only the second year (a pyramid) carried twenty-four fruit of good equal size and fine flavour; 120 set fruit having been removed. The tree promises well for next year—indeed, is a picture.

"A *Grosse Mignonne* carried twenty-three—a beautifully spreading bush not more than two feet high. Then a *Royal*

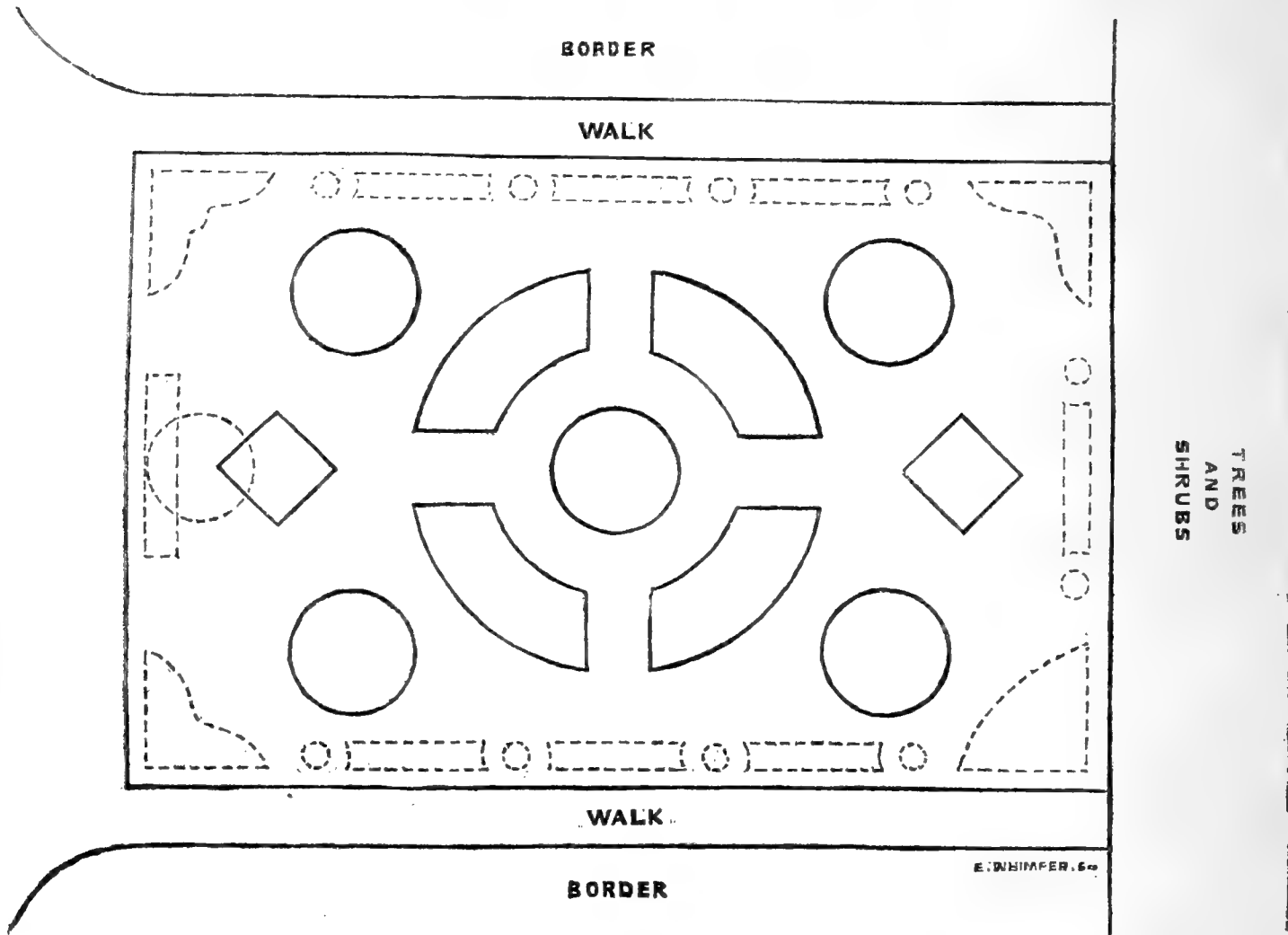
George, Barrington, Boudin, &c., carrying about two dozen fine fruit of first quality.

"As for the Pears and Apples, they were greatly and justly admired. A little pyramid, Beurré superfin, carried fruit for which my gardener obtained an extra prize. One of the fruits weighed sixteen ounces, and was afterwards enjoyed by a neighbouring family, and pronounced most delicious. And now we are eating Winter Nelis and J. de Malines, of exquisite flavour and good size; for the trees having been started early in the spring the

fruit is now ripe, and has been, indeed, for nearly a month past. I must add, that with a small forcing-house, which supplied pot Grapes and Figs in April, I had fruit from that month until September.

"I find that the necessary syringing in summer does not agree with flowers, so I am getting up a nice collection of foreign Ferns to place amongst the pots in my centre raised border, which will look splendid, and, perhaps, may prove a hint to some of your orchard-house lovers."—COLCHESTER.

FLOWER-GARDEN PLAN.



IN answer to "W. H. B." Your plan, shown in outline in the above drawing, is as good as any of those which attempt to occupy the centre space of grass in small gardens. Twenty-two yards by fifteen yards, with a walk down each side, and one across the top and bottom, and the whole space of grass included between these walks cut up into flower-beds at equal distances apart is surely a waste of the gift of Nature.

To have the greatest number of flowers, to have them to the best advantage, and to be able to enjoy as much of green grass in proportion as a lark in a cage, the only proper mode in such gardens is to make the flower-beds all along the sides of the walks, as shown by the dotted parts in the plan, and to be two feet only from them; to have the side of the beds next the walk of the same straight line, and to leave the middle of the grass entirely free, and no trees or shrubs to be out of the line of the beds. The beds to be alternately an oblong, each bed not less than twelve feet in length, and six feet should be the width of it and of the circle which divides it from the next oblong bed. Four corner beds to be different, so as to fit into the angles like quadrants; but the curved part of the quadrant may take any fancy shape. The bed fronting the house to be either an oblong or large circle as shown by the dotted outlines. In each of the circles we would have a *pillar Rose* of some good Hybrid Perpetual on its own roots, and a row of tall standard Roses along the centre of the oblong beds four feet or five feet apart, and the two angle beds furthest from the house we would devote entirely for Roses: standards in the middle, one row of dwarf Roses round the standards,

and room left for one row of Scarlet Geraniums, and one row of Variegated in front for summer, and for spring flowers; and the Gladioluses, the best of all flowers for town gardens after Scarlet Geraniums, we should mix amongst the Roses in the angle beds.

The borders of the boundary lines must always be planted according to the purse—the cheapest is Irish Ivy to cover the walls, and a collection of odds and oddities to be planted as thick as they will stand, just as common builders manage. The finest way for effect would be to have groups of moderate growing trees and evergreens along the wall swelling out to within a yard of the walk in places, and falling back in other places to a screen line of evergreens next the wall, and to plant the bays thus formed with tall flowers or fine specimens, and to have Roses and mixed flowers all along the walks.

The leads next the house, if well supported, may be made a shrubbery in winter and a complete flower garden in summer. Make large beds or borders on the leads, just as on the grass below, with walks between. Give eighteen inches depth of soil, with brick, or wood, or rock edging.

FORCING.

(Continued from page 121.)

HEATING BY FLUES.

THE chief objections against such stoves as have just been alluded to, and also heating by iron plates in a back wall of a

house, with a fire from a living-room or kitchen on the other side are:—First, that there is apt to be too much heat in one place; and, unless when extra well managed, though the back of the house may be even hotter than desirable, the front may be much colder than is wanted. There is a natural tendency in heat to diffuse itself until an equilibrium is gained; but as at the same time all heat ascends, it is apt to accumulate at the back of the house when the heating medium is there. It is true that the rays of heat from a stove at the back of a house not only ascend, but will be radiated towards the front of the house; but just as from a fireplace in a large room, these rays will lose their force in proportion to the distance from the heating medium. In all places of any size, and where anything like continuous regular heat is desirable, flues are not only greatly superior to stoves, but when run chiefly along the front of the house instead of the back, the heat is not only more regularly distributed, but a thorough circulation of the air in the house is secured; as, no sooner does the air in contact with the heated flue become rarefied and rise, than the colder air is brought to supply its place to be heated and rise in turn.

For small solitary greenhouses, for forcing-houses of no great dimensions—say, 40 feet by 12 or 15 feet, standing by themselves, I believe that good flues are still the best and the most economical mode of heating, and that the more these flues stand above the surface of the soil inside, and the nearer they are to the front of the house that convenience will admit of, the greater will be the power they will exercise on the atmosphere of the house. On the principle of the ascent of heated air inside as well as outside of a flue, it is as well that the flue should rise a little from the commencement to the extremity where it joins the chimney. It is often necessary to make flues decline so as not to interfere with a pathway at a door, and, provided there is a high chimney at the back wall—say, ten or more feet in height, and the depression at the lowest point is fully a foot or more above the furnace bars, there will be a good draught; but, on the whole, flues will generally draw better when there is no dip in them at all, and extra draught can easily be regulated by a damper. When there is only one doorway in the end of a lean-to house, these dips and depressions may be avoided by sinking the furnace at the back sufficiently low to allow the flue to pass under the pathway before rising into the house (see *fig. 5*), rounding that end, passing along the front round the other end, and going into a chimney there, or returning by the back wall and entering a chimney near the furnace, as shown in

make turns in flues at right angles **L**; but it is better to make them rounded **U**. The heated air thus passes more freely. A rounding should also be given in the shape of an inclined plane to the flue as it comes from the furnace-bars. These bars should never be less than two feet from the bottom of the flue. (See furnace in *fig. 5*.) When there is no shed behind, the stokehole may be covered with a wooden flap-door. So far as mere working is considered, the furnace may be at either end, or even in front as well as the back, though in all lean-to houses the chimney is best at the back, and in span-roofed houses it is best at the end.

Now, when restrictions as to the form and size of bricks and tiles are removed, it would be easy to get material made on purpose for flues, and with covers especially made hollow so as to hold water. Until then bricks of the common size will be chiefly used, and for all forcing—not early, or where continuous heat, as in the case of the Pine Apple, is not wanted—bricks from two inches to two inches and a quarter thick, but all exactly of the same thickness, will answer well for sides and bottoms.

For a seven-and-a-half or eight-inch-wide flue, inside measure, we would proceed thus:—Mark out the base of the flue one foot wide, ram the ground well for a couple of feet in width, and if not sure of it put down four inches of concrete. If ground is firm do without that, then lay one course of bricks on bed, or on edge, on the ground level, and grout with good mortar; on that place a twelve-inch tile from one inch and a half to two inches thick, though thinner will do. This will form the bottom of the flue; slate will do four yards from the furnace. On this build the sides with brick on edge, having previously damped all the tiles and soaked all the bricks, which should be new and hard-burned, and join them together with best lime putty and as small joints as possible, keeping the inside especially perfectly straight with no protuberances. A flue formed of four such bricks laid lengthwise and edgewise will be enough for a Peach-house or vinery not forced very early. The top should be covered with one-foot tiles neatly jointed. To prevent these joints giving way in forming the flue, it is as well to use firebricks for a yard from the furnace and to cover them with brick; for four or five feet further the place might be covered with thin house-tiles, and after that with very thin slate chipped to the width of the outside of the flue. On these tiles and slates spread a thin layer of first-rate mortar, and on these place the top tiles. All the joints will thus be crossed, and there will be no chance of smoke escaping. If these tiles are hollow so as to

hold water it will be a great advantage **U**. The outsides might all be made two inches and a half or three inches in height, whilst the centre was only two inches thick. Such a flue would do for a late vinery or Peach-house 50 feet long, 12 feet wide, and 12 feet high, by merely passing through it along the front and both ends. If forcing was commenced in January, the flue would have to return or be higher and three inches wider. If forcing in such a house was commenced in November the furnace would have to be larger, and for fully the half of the length of the house we would build the flue as it came from the furnace with brick on bed instead of brick on edge, so as to equalise the heat more. In all cases where it is desirable to have a house 40 feet or 50 feet long as hot or nearly so at one end as at the other, we should adopt this plan. The four inches and a half are so much longer in heating than the two inches and a quarter, that the heat is carried along. We have found this simple expedient answer all the purposes of re-

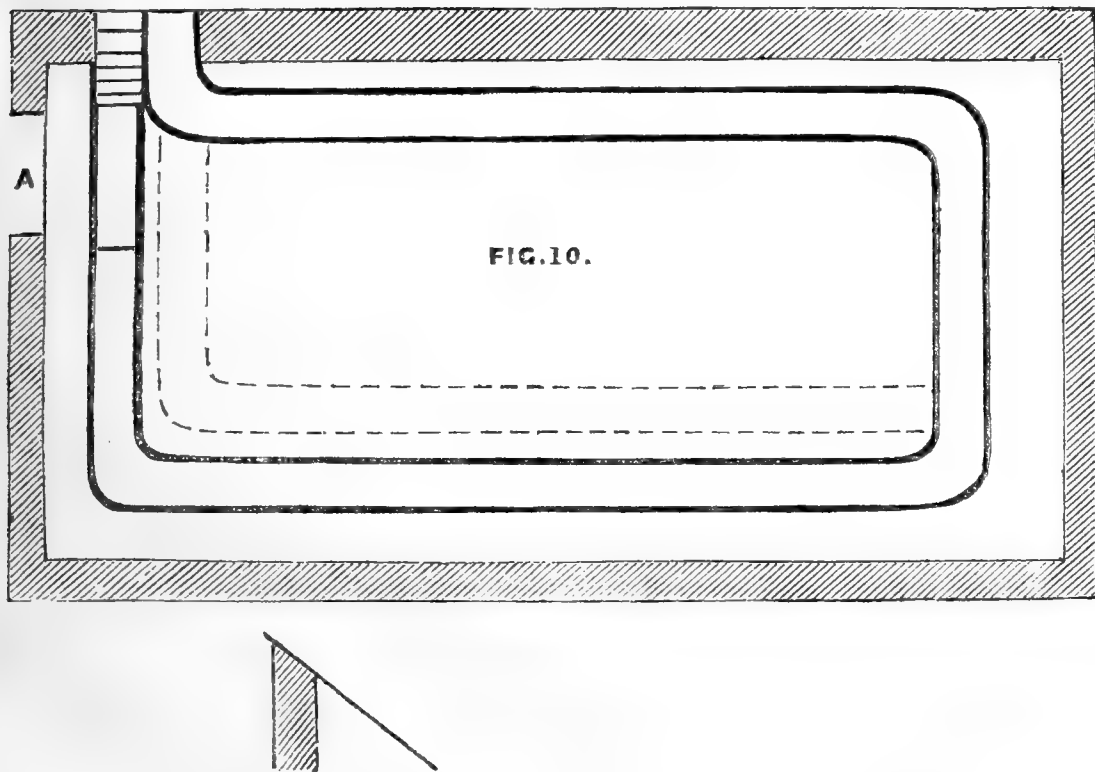


fig. 10. The black lines are intended to show the flue and to be under the ground level until the doorway is passed at A. If the flue entered at the farther end, the furnace-bars need not be so much sunk, and then the flue might return in front, separated a few inches from the other as shown in the dotted lines in *fig. 10*. Where convenient this is a capital plan. It is usual to

serve flues, and air-flues on the top of the others. We would have no plastering at all inside, as it is apt to be dislodged in cleaning, and, falling at other times, it is apt to cause an explosion in the flue. Neither would we plaster outside if joints were sound. Where great heat was wanted, as in a chamber below Pines, &c., we would sooner use bricks their full length,

nine inches for a couple of yards from the furnace, and brick on bed afterwards. In all cases where a continuous high temperature was wanted, we would use brick on bed, and a covering of three or four inches; because once heated it would require no more fuel to keep heated, and the bricks would not only form a reservoir of heat, but anything in the way of accident from smoke would be next to impossible.

I ought to have said a word on furnaces. Their size may be regulated according to the fuel. One 2 feet long, 18 inches wide, and 18 inches deep will do for a good sized house, such as the one referred to, when Newcastle coal is used. When Derby, Midland coal or cinders are chiefly used, the furnace should be one foot longer and six inches wider. It is always best to have it large enough. The furnace should be built with firebricks and Welsh lumps, not only because they stand the fire better, but conduct heat more slowly than most other materials that can be used. If in surrounding these with brickwork, a small open space two or three inches could be left nearly all round the lumps, the brickwork will be kept comparatively cool, and most of the heat thrown along the flue. Were it not for the first expense, instead of the usual furnace and ash-pit doors which soon get out of order unless managed carefully, Sylvester's doors which slide in on a rod and groove, and can be regulated to the greatest nicety, are the best. In managing the fires keep in mind what has been said about stoves, and after the fire is lighted admit air only through the ash-bars. I have found, however, that a very small hole in the furnace-door near its top from one-eighth of an inch to a quarter of an inch in diameter, tends to the more thorough consumption of smoke, and that for this purpose a small supply of fresh air supplied to the farther side of the furnace has also the same effect. In a chimney connected with a hot-water boiler there was a damper about two feet from the ground. Below that was a plate of iron for cleaning the flue close to the ground, and in making a hole in that plate a quarter of an inch in diameter, the smoke and heated gases seemed to be driven back and passed again and again over the fire.

I have omitted to notice that much may be done in this way, by keeping the red-hot fuel near the mouth of the flue, and the fresh fuel nearer the furnace-door. Much of the smoke and the lighter gases are thus consumed instead of bolting up the chimney and for a while cooling the flue too; but, unless an amateur attends to these matters himself, he has little chance of getting them cared for.

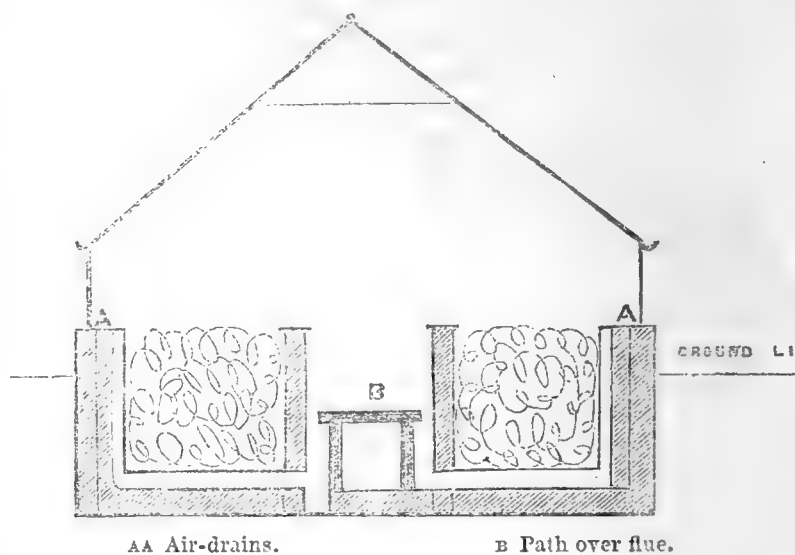
• I should also have mentioned, that where it is not convenient to have tiles hollowed for covering, earthenware vessels, or vessels of iron or zinc set upon the top of the flue and supplied with water, will give plenty of moisture in the growing season. Unless the flue is comparatively cool we disapprove of sprinkling water on it—in fact, it is best avoided at all times. The vessels on the flue and sprinkling the paths will furnish a sufficiency of atmospheric moisture.

In building the flues, iron doors a foot or so square should be let in at the sides at the turns, so that the flue may be cleaned easily without pulling it to pieces. When replaced some thin tiles and plaster will make these places look like the rest. If the flue is used only for two or three months it should be cleaned when the crop is gathered; when almost constantly in use they should be cleaned three or four times in the year. Soot is a famous non-conductor of heat; and therefore the less on the sides of the flue the better, and the less the danger of soot-firing and explosions, which burst the joints of the flue. With the conveniences referred to the brush or wooden hoe can be easily passed along, and no mess need be made with common carefulness. We have seen flues half full of soot, clinging to every part, sides, and bottom and top. Fuel must have been cheap there to allow of such waste.

Once more. I have said that to get the most from a flue it must stand clear and be above the level of the house-floor to be heated. This applies especially to seeing the effects of a flue at once. The heat of a flue though sunk is not lost; but it may most likely be absorbed in brickwork or earthwork, which afterwards may be given out slowly, but which does not answer your present purpose if you wish directly to influence the temperature of a house. A current of air brought to act upon a flue in a somewhat confined position will neutralise very much these inconveniences. We once met with a span-roofed house heated by a sunk flue in the centre, and a plunging-bed of tan at each side, in which the plants at the outsides did not thrive until a drain-pipe was taken from the front to the sides of the flue

every five feet or so in length, as shown in section 11th. Hot-water pipes would be none the worse for a similar plan when sunk in a trench. Where round earthenware tiles are not handy, semicircular ones will do well for such air-drain placed against the wall.

SECTION 11.



Earthenware Pipes, Iron Pipes, &c.—Some of our correspondents have asked how these would do as a substitute for brick flues. Of iron pipes we have no liking, unless they were from nine to twelve inches in diameter, and then they would be more expensive than brick flues. If at all hot the heat given off is unhealthy to plants. All sorts of earthenware pipes, and Portland cement pipes, if from nine to twelve inches in diameter, will do well for greenhouses or where there is only an occasional fire to keep out frost. The hard-burned pipes now used so much for drainage in towns will do well where only a little forcing of Vines or Peaches is required. They should not be less than from nine to twelve inches in diameter; and in every case a brick flue should be continued two or three yards from the furnace before the pipes commence, to prevent cracking. At every place where it would be necessary to put the brush in for sweeping we would have a hollow brick pillar covered with a flat tile to receive the ends of the pipes, and thus sweeping could easily be done without deranging them. It is best to have such as will fit pretty well in the sockets. For particular purposes, and where the best hard pipes are used, Portland cement may be employed at the joints; but good lime mortar will answer well, wetting the joints before applying it, and letting all dry well before using. If a crack should show, daub it up with lime putty or even common lime mortar.

Where a house is larger than I have referred to—say sixty to eighty feet in length, and to be forced early, it is best to have a furnace at each end in preference to having a larger furnace and flue at one end.

R. FISH.

(To be continued.)

MILDEW ON GRAPES.

I BEG to add a few remarks in support of the assertion made by Mr. Gadd at pages 135 and 136, "that syringing does not cause mildew on Grapes." I am glad to say that I never had the mildew on Vines yet, and I always syringe my Grapes up to the time they begin to change colour, taking care that the water I syringe with is fresh, and not under 80°. This season I have had an excellent crop of both early and late Grapes.

Notwithstanding the very unfavourable season we have had, I have taken every opportunity of dashing water on my Vines, always taking care that the moisture was dried up before the sun came hot upon them.

I ascribe mildew to the rays of the sun falling upon the glass while there remains a close, damp atmosphere in the house, and not, as Mr. Gadd says, to a low temperature.

I use very little fire heat in forcing, and that only in the morning, lighting my fires by six o'clock, admitting an abundance of top air as soon as the flues or pipes are warm, or before if required. In the afternoon I syringe, and close the houses with as great an amount of sun heat as possible until the Grapes begin to change. I then leave a portion of top air on all night.

My Hamburgh Grapes have been an excellent colour, and measured from $2\frac{3}{4}$ inches to $3\frac{1}{2}$ inches in circumference.—
T. H. C.

HORTICULTURAL SOCIETY.

THE Horticultural Society may now be said to have resumed all its functions. The practical part has been in full operation at Chiswick for the last twelve months, and final arrangements have been made for the resumption of the Grand Floral Fêtes which for so many years attracted to Chiswick such a blaze of beauty and fashion as were nowhere to be seen in the world besides. It is not, however, beneath the shady verdure of Chiswick that these great displays are now to be held. The distance from London was found to be too great to induce the fashionable world to run the risk of our proverbially changeable climate, and the consequence was that similar places nearer town derived the advantage of their more convenient situation. It is to the palatial gardens at Kensington Gore that all eyes are now attracted to see those displays of horticultural skill which were so much admired at the great exhibitions at Chiswick; and if we may judge from the arrangements that have just been completed, we cannot doubt but that "the opening" in June next will be one of the grandest things of the kind ever witnessed in this or any other country. In the course of a few days the schedules of the exhibitions for the season will be ready for distribution.

It is decided that the first Grand Exhibition will be held on Wednesday and Thursday, June 5th and 6th and it is generally believed that it will be opened by Her Majesty and the Royal Family in person. This exhibition will consist of Flowers and Fruits; and prizes to the value of about £750 will be awarded.

At this Exhibition, C. Wentworth Dilke, Esq., will offer prizes amounting to £20 for the best group of three baskets of Fruit and Flowers for decorating the dinner-table.

On Wednesday, July 10th, the Grand Rose Show is to be held, when prizes on the same liberal scale as the preceding are offered.

The Grand Dahlia Show is to take place September 11th, and, besides Dahlias, is to include cut blooms of Roses, Hollyhocks, Asters, Gladioluses, Phloxes, and Verbenas.

The Grand Fruit and Chrysanthemum Show will be on the 6th and 7th of November, for which a tempting prize list is also offered. The total amount of prizes for these exhibitions will be somewhere about £1400. Ample arrangements have been made for securing every facility and convenience for the exhibitors; and there is a liberal, though not profuse, provision of breakfast tickets, and passes for them and their attendants.

Besides these grand displays, there are to be the usual monthly and bi-monthly Meetings of the Fruit and Floral Committee, which will be held in the new hall at Kensington Gore, and to which the Fellows will be admitted after the Committee have made their decision.

FRUIT COMMITTEE.—A Meeting of the Fruit Committee was held on Tuesday the 11th inst., Mr. Graham in the chair. A large collection of Fruits from the East Riding of Yorkshire Local Committee was examined, and which furnished much valuable information as to the varieties which succeed and fail in that district, and particulars of which will doubtless be published in the "Proceedings" of the Society.

A collection of Pears were sent from the Society's Garden at Chiswick, most of them first-rate varieties in good seasons, but generally very inferior in flavour as exhibited. A very marked exception must, however, be made to Winter Nelis, which was grown in the orchard-house, and contrasted strongly with that grown on a pyramid in the open air. The former was most delicious and could not have been produced in better condition, while the latter was inferior in flavour.

Mr. McKelvie, of Stevenstone, Torrington, sent a seedling Pear, which is of a small size, turbinate, with a rough coat, and having an aurora glow on one side of it. The flesh was very melting and juicy, sugary, and richly flavoured, with a powerful aroma like the Seckle. This received a First-class Certificate.

Mr. McLaren, of Cardington, Bedford, sent a seedling Apple, which has considerable resemblance to the Blenheim, but is more acid in the flesh than that variety; and Mr. Graham of Cranford, brought handsome specimens of Franklin's Golden Pippin,

Court of Wick, and the small dessert Gooseberry Pippin—the latter a very fine Apple.

Mr. Loddiges, of Hackney, exhibited a Queen Pine of large size which he had grown in an old Orchid-house, which received no artificial heat during the past summer. It was grown in a pot standing on an inverted pot over an open water-trough, and the only heat that had been given was during the last three months.

Mr. Veitch, of Chelsea, sent a fine collection of twelve sorts of Melville's Variegated Garnishing Kales, in pots. These come true from seeds, and are highly ornamental, the colours being exceedingly brilliant, and of all shades, from magenta to pure white, some fringed, others veined, and some blotched. More beautiful "foliated" plants could not be found, and they might be advantageously made use of for the flower garden in winter.

Mr. Melville, of Dalmeny Park, sent a Curled Parsley, which did not differ from what is already grown in the south. Also, a sprouting Cabbage, which produces a large head on the top of the stalk, and a great number of sprouts, in the way of Brussels Sprouts beneath. This was referred to a Committee to decide upon the flavour when cooked, with power to award a First-class Certificate if approved.

CHRISTMAS DECORATION IN CHURCHES.

THE very proper and respectful old custom of decorating our churches with Holly and other evergreens at Christmas, has led me this morning to form a pattern letter for our parish clerk, who is a man of taste and a good fellow, thoroughly theological; but who, I am sorry to say, is paid nothing by the parishioners for his services.

The manner of placing the evergreens indiscriminately about our village churches ought, by this progress of time, to be relieved by something more tasteful and with meaning in it. For instance: appropriate Scripture texts placed conspicuously for all readers—devices certainly better than little bits of boughs stuck all about, which are much more likely to cause annoyance than right feeling. At any rate, for those who may not have given a thought how to do it, I write to inform them, that wire letters formed thus, PEACE, and their skeletons overlaid with Silver Fir or flowing strips of Yew, having their bases and capitals ornamented with small sprigs of Aucuba japonica, variegated Laurel, or Holly with bunches of berries, and again midway on the letters so as to appear in a straight line through the sentence, could simply be wrought out almost by anybody. Very small iron tacks, so as not to injure the walls, will serve to suspend the letters upon if they are not formed too heavy, which ought not to be. Form the foliage upon them light, free, and flowing.

As a wreath for pillars, Laurel leaves in pairs, stitched on to a coarse green piece of binding tape, and overlapping each other continuously, are easily accomplished, as well as an occasional star or cross.—UPWARDS AND ONWARDS.

TO CORRESPONDENTS.

HEATING A SMALL BOILER (A. E. R.).—We know of no means of preventing soot accumulating on the bottom if oil or any other fatty substance is burned under it. If an argand burner is used there is the least accumulation of soot, because as much air as possible is admitted to the flame, and the combustion of the oil is consequently facilitated. We have no experience with paraffin or any other combustible for such a purpose except gas, which we consider preferable to anything, when, as in your case, there are tubes for carrying off the fumes. See what is said in answer to another correspondent to-day.

STOPPING CHRYSANTHEMUMS (H. B.).—Mr. Bird's treatment of the buds, as mentioned by Mr. Beaton at the time, refers exclusively to cut flowers for competition.

ROCKERY PLANTING (T. M.).—Send your address and five postage stamps and we will return you "Flower Gardening for the Many," it contains a long list of suitable plants and how to cultivate them. If you require more information than it contains write to us again.

GARDEN PLANS (Jane Lewis).—"Flower Gardening for the Many," recommended to the preceding inquirer will give you the plans you ask for. See, also, one in our pages to-day. You could get patterns of garden edgings of Messrs. Eastwood & Co., Belvidere Road, S.

GATHERING CONES (Melcombe).—The cones of Conifers should be gathered as soon as convenient after the seeds are matured.

REMOVING A GREENHOUSE (A Constant Subscriber).—It has been decided that a nurseryman and florist can remove such a structure though fixed to the freehold, but that an amateur cannot. It is better in every case to have a written permission for its removal from the landlord before the house is built.

PRUNING FILBERTS (W. K.).—Remove all the suckers. Prune in February. Remember that the nuts are borne at the points of the young spray, and prune accordingly. It is too late to make a Mushroom-bed unless under the shelter of a shed, and there you make one even next month.

FORCING TREE PÆONIES (Idem).—They will stand very little forcing, and that little much better after January and February than in December. You have acted in the best manner with those you have taken up, which taking up is also against them. Were we in your case we would let the pots remain plunged in the mild hotbed out of doors for two months longer, merely protecting the heads and buds of the plants with evergreen branches, or a mat in an extra cold night. Independently of other reasons, we never think the colours of the flowers come out nicely fully the sun has gained some power in spring.

MOVING A LARGE CEANOTHUS RIGIDUS (Idem).—Unless you can lift such a plant with a ball carefully, the blossom will be apt to suffer. Unless from necessity, we would allow the flowering to pass, then dig round the plant, partly undermining it, cutting the far-extended roots, put some fresh soil round, give a good watering, and move with a ball the beginning of next October. With the exception of the flowers suffering the plant may be moved now.

OVER-PRUNED PEAR TREES (Idem).—We would graft the Pear trees if very old; but if not very old we would remove alternate branches as you say, leaving the branches from eighteen inches to twenty-four inches apart, and then we would train young wood on between them, provided it comes regularly, which we presume would be the case, from the places where the spurs were removed from, and either train them downwards or backwards. From nine inches to twelve inches is a fair distance.

ORCHARD-HOUSE (Kate).—We presume your house faces the south, and that you have command of air in front. Then the proposed air giving by boards will do; but, of course, if these ventilators were glass it would be better. In autumn, at least, they will shade some fifteen inches of the wall.

HEATING A TANK BY PIPES (Melville).—In such a tank we would use three four-inch pipes, or four three-inch pipes. The pipes may be of any convenient size before entering the tank if above one inch in diameter. In such a house always kept pretty warm there will be no danger from all the contraction and expansion of the pipes in passing through the cemented wall.

JASMINUM GRANDIFLORUM (A Subscriber).—In such dull weather as we have had the potting would be apt to give the plant a check, especially if the greenhouse was cool. Potting was bad treatment if you wanted the plant to bloom in winter. In general it blooms in July and onwards. If the shoots are alive never mind the leaves, but keep the plant, prune it back a little in March, and you will probably have fresh shoots, leaves, and flowers in summer.

GRISLINIA LITTORALIS—RHODODENDRONS (G. Hanbury).—The plant is a newish hardy evergreen of moderate growth, and suited to the front of shrubberies. The flowers are just like the flowers of two-thirds of all our evergreens—not so showy as the leaves. See our No. 616, page 250. High-coloured Rhododendrons are all of one shade, and there is not one of them that will do as you propose. Some half a dozen out of all our best gardeners might manage to do as you suggest, but there is not an ordinary man in England who could do it.

PLANTS FOR BACK WALL OF A GREENHOUSE (A Young Beginner).—We should be glad to assist you if we knew exactly how. You would see that lately we recommended Camellias for such a place if at all shaded. Now we know nothing at all of the arrangement of your house, and whether you have a stage in the middle or not, or how that would shade the wall or not. Besides, though climbers and creepers look well anywhere, their chief beauty will be found in their dangling from a rod or rafter instead of being trimly trained to a wall. We question whether Camellias and Acacia armata, or some other with fine foliage, would not suit you better than mere climbers. There are none better or prettier than Passifloras; and two or three, such as cœrulea, cœrulea racemosa, and Colvilli, would fill your place. Then for finer climbers there are Kennedy's Marryatæ, K. nigricans, Hardenbergia, Comptomeria monophylla, and macrophylla, and Habrothamnus elegans, which would fill your space; but these latter would need a good amount of light, and all except the last a portion of heath soil. When we know more particulars we may be able to advise better.

TURNING A GRAVEL WALK INTO A GRASS WALK (An Old Subscriber).—Most gravel walks will soon get green enough if they are let alone. Some of the easiest walks to keep and walk over that ever we met with were neglected gravel walks in a kitchen garden. Box some nine inches high was allowed to remain at the sides, and the small weeds soon took possession and covered the gravel; and a chop with the scythe once or twice a-year made in the whole a pleasant walk for tender feet. Such natural seeding, however, would not do in the middle of your lawn, nor even throwing seed along the walk; because, if that walk is two or three inches below the level of the lawn, it would take several years even with top dressings before the place occupied by the walk and the lawn would be of the same level. We would, therefore, remove part of the gravel if worth the trouble; but there is no necessity for doing so if you can place a couple of inches or so of soil above it. Then sow with seeds in the second week of March. If you did not mind a mere trifle for the seeds we would sow now; for if the winter was mild the grass would sooner be turned into lawn. If the winter proved severe you could sow again. If from the sides of roads, sides of walks, &c., you could get numbers of pieces of turf about two inches square, and placed them all over six inches or even seven inches apart, a fine firm lawn would soon be formed, especially if you sowed in the intervening spaces as well. If you gave the size of the ground to one of the respectable firms whose names appear in our pages they would send you the right seeds and the proper quantity.

FLOWER-BUDS OF AZALEAS FALLING (Idem).—It is very likely that the peat was rather strong at first, and more likely still that the interior of the ball of earth got too dry. For American blight, oil, turpentine, and Gishurst Compound will settle them; and so will clay paint if you keep them shut up in it.

PRUNING THE POMEGRANATE (Idem).—Go over your Pomegranate tree and prune it, removing all old wood that is not wanted, making sure that you leave a sufficiency of buds, either on spurs or on middling-sized shoots to give you a regular supply of moderate-sized shoots all over the tree next season. From the points of these middle-sized shoots will

the flowers come next summer, and in summer pruning the very weakest and the very strongest should be removed to give the middle-sized flowering shoots room. After the first season the Pomegranate will stand close cutting in, every shoot to a bud at its base about the end of October, and a little thinning at the beginning of summer, if the shoots are too numerous.

CHRYSANTHEMUM CUTTINGS (Palmyra).—The Chinese method of growing Chrysanthemums, as Mr. Fortune tells us, requires such a degree of practical knowledge of them, and such a degree of perseverance, as very few of the people of Europe have yet acquired. We have, perhaps, only one gardener out of every five thousand head gardeners in England, who could do the Chrysanthemum up to the Chinese model. Therefore, although we encourage emulation in the highest walks of gardening, and endeavour to stimulate those who ought to aspire, to excel in all the modes of cultivation, we never advise amateurs to meddle in things which are wholly beyond their reach. As good flowers can be had for private use by Mr. Salter's natural system, with hardly one degree of the most ordinary care necessary, as can be had, for public competition, by the most complicated contrivances of the China school. When one is an adept at the natural or open-ground plan, the next step is the pot culture, in its simplest form and practice of shifting from one pot to another. As in the common run with other plants, and when any one is master of that mode, he or she might be excused for wishing to emulate the pagans in their growth and culture. But the top of the ladder will never be reached by attempting to get at the top round as the first step. Write again to Mr. Winter and inquire.

DAISIES ON A LAWN (J. B. Lancaster).—There are no means of getting rid of Daisies except pulling them up by the roots, or digging the lawn, and then the next crop of Grass is just as liable to be covered with Daisies as the last: therefore, spudding them out is the only remedy. The best climber for a pole depends so entirely on the height of the pole that we can hardly even guess what you mean and require. A Rosa ruga, or a Virginian Creeper, will do for a pole from ten feet to twenty feet high. Perhaps, on the whole, the Virginian Creeper is the best on account of the smoke.

NAMES OF APPLES (T. B. B. Owen).—1, Hollandbury; 2, Beauty of Kent; 3, Syke House Russet; 4, Royal Russet; 5, Braddick's Nonpareil; 6, Hughes' Golden Pippin; 7, Hampshire Yellow; 8, Pearson's Plate; 9, Minchall Crab; 10, Northern Greening; 11, White Costing; 12, Court-pendu Plat.

NAME OF HOLLY (W. X. W.).—It is the common golden-edged, Ilex aquifolium aureo-marginatum.

POULTRY AND BEE-KEEPER'S CHRONICLE.

POULTRY SHOWS.

DECEMBER 18th and 19th. LORD TREDEGAR's, at Newport, Monmouthshire. Sec., Mr. C. H. Oliver, Commercial Street, Newport. Entries close Nov. 21st.

DECEMBER 21st and 22nd. HALIFAX PIGEON SHOW. Sec., D. R. Edgar. Entries close December 8th.

DECEMBER 27th, 28th and 29th. KENDAL. Hon. Secs., C. C. Whitwell and T. Wilson. Entries close December 12th.

JANUARY 2nd and 3rd. CORK. Sec., J. Dowling, Janeville, Sunday's Well. Entries close December 15th.

JANUARY 16th and 17th. POULTON-LE-FYLDE. Hon. Sec., Mr. J. S. Butler. Entries close January 1st.

JANUARY 25th and 26th. CUMBERLAND AND WESTMORLAND. Secs., Mr. M. W. Hastwell and Mr. W. T. Armstrong. Entries close January 12.

JANUARY 30th and 31st. ULVERSTON. Secs., Mr. T. Robinson and Mr. J. Kitchen. Entries close January 10th.

FEBRUARY 6th and 7th. LIVERPOOL. (Poultry and Pigeons). Sec., Mr. A. Edmondson, 4, Dale Street.

JUNE 4th, 5th, 6th, and 7th. BATH AND WEST OF ENGLAND.

N.B.—Secretaries will oblige us by sending early copies of their lists.

CRYSTAL PALACE POULTRY SHOW.

WE doubt whether Aladdin's lamp ever reared anything so beautiful as this building; and even if it did, this advantage must rest with us that ours is not such a will-o'-the-wisp as his was. It does not disappear as rapidly as it came. It remains, and twice during the year it affords us such treats as this we now record. Generally it winds up the season or nearly so, although it is held at the beginning of the year; but then there are the dust, and the dirt, and the coloured paper, and the worn-out cardboard, and the last lots, and really very little damaged articles that remain on the stalls—which have for the occasion descended from the galleries. Some people do not like this. Now the Cattle-Show week is chosen. It is funny running from the capital of the iron world, with its clouds, and blasts, and flames, and chimnies, and dosing while there is a mental recapitulation of all the pleasures and triumphs of Birmingham, to wake up in such a different scene. Both have one feature in common—that is, the musical notes of the various cocks, relieved at times by the quack of Ducks, the cooing of Pigeons, and the hoarse notes of Geese. We had this year another feature common to both Exhibitions—cattle; and in one respect the Palace went beyond the Hall—it had horses. Some difference between the two mammoth longhorns at Birmingham and the Brittany cows at Sydenham—between the

huge square fat sheep of the one and the three wee animals of the other. The horses, too, were very small but symmetrical—many will have seen them. We will inform those who have not they are very curious and exceedingly diminutive creatures; they seem to possess all the obstinacy and selfwill of pets in general, together with a considerable amount of cunning.

In every respect this must be considered the largest and most important Show yet held at the Crystal Palace. Entries, sales, and visitors were all on the increase, and the quality of the birds kept pace with them. Some disappointment and much inconvenience arose from the non-delivery of baskets by the Railway Company or Companies. This is wrong. It is no boon for a Company to offer to carry birds free if they believe the acceptance of such an offer absolves them from the punctuality that would become compulsory if they received 1s. or 1s. 6d. as carriers. It is no modern grievance that Poultry Shows have with many railways. At these periodical gatherings thousands meet together, *all brought* by railway. In some instances there is no reduction of fares; in others numbers are sufficiently important to justify excursion trains. In either case the profit is to the Company; and it is asking little when all that is claimed is that the birds should be forwarded speedily and punctually. None reap so much benefit from these exhibitors as directors and shareholders, and they should offer every facility in their power—not to say some silver cups as prizes. These remarks are necessary; because birds that left their destination *early* Monday morning, and that would have been delivered in London the same evening, did not reach the Crystal Palace till half-past one on Tuesday!—many of them too late for any other purpose than to be looked at; while a few energetic amateurs, who brought their own birds down, reported more than a hundred baskets lying at the station. We say no more now, because some inquiry *must* take place.

The first class of adult *Spanish* was a better, and, we think, a more numerous one than that of last week. We had not to complain of repulsive faces, and the hens were decidedly better. Mr. Rake's pens were perfect, while those of Messrs. Lane and Teebay were of great merit. Our record of the Spanish classes will be an almost continuous list of first prizes for Mr. Rake; chickens and two in single cocks all fell to his share—five prizes. Messrs. Rodbard, Smith, and Lane also deserve mention.

The class for two *Hens* or *Pullets* does not fill as we anticipated it would when we advocated its formation many years since.

The giants of the *Dorking* class met again with trifling alteration; those that had been strengthened rising, while those that had to bear the brunt of both lost ground, as may be expected. Thus the Hon. Mr. Vernon was first, Lady L. Thynne second, Capt. Hornby third, and Lady Winchester fourth. It may be difficult to say what changes may take place when these pens meet again; but it is, we think, safe to say they will always have the prizes among them, unless they are weakened by sales, death or mismanagement.

The *Chicken* class brought forty-six nominations—we cannot call them entries, for many did not appear till the afternoon, and, consequently, did not compete. This was in some cases cruel; for when the birds came there were many of them such as should have received distinction of some sort at the Judges' hands. Among these was a pen belonging to Capt. Hornby. Lest, however, those who gained Commendations and High Commendations may be disposed to think lightly of them, and to doubt whether they should prize their honours highly, we will tell them they followed Lady L. Thynne, the Marchioness of Winchester, and Mr. Wakefield.

Lady L. Thynne and Mr. Wakefield took the prizes in the *Hen* and *Pullet* class.

Also, no classes have improved more than those for *White Dorking*. They mustered thirty pens; but the increase in quality is more remarkable than in numbers, and if the progress be continued they will be nothing behind their Coloured brethren. Capt. Beardmore took both first prizes, Messrs. Antill and Wilcox second. We must repeat our commendations of these classes.

Thirty-six *Dorking Cocks* competed for distinction; Lady L. Thynne took first and second, Mr. Botham third. It was a good class, but the birds were not so good as those shown in 7 and 8.

The adult *Cochin-Chinas* were highly meritorious, two-thirds of the pens being mentioned by the Judges. Mr. Cattell was first, Mrs. Fookes second, and Mr. Tomlinson third.

The *Chickens* were not so good as their sires, and they brought prizes to Messrs. Jones and Kellaway, and Mrs. Herbert.

The *Grouse* and *Partridge* birds improve, and brought us here some faultless specimens. Messrs. Stretch and Musgrove took the first prizes. Mr. Peplo Cartwright took two, and Messrs. Herbert and Stretch took the others.

The *White Cochins* are losing ground, and but for Messrs. Chase, Dawson, and Peters, we could say nothing for them. Only two pens entered in the adult class!

Cochin Cocks were good, and the two prize birds belonging to Messrs. Tudman and Yonge deserved their prizes.

The *Brahmas* were among the best classes of these beautiful birds we have seen. Six adult pens were noticed by the Judges, and the same number of chickens. As usual, Messrs. Botham, Teebay, and Craigie took the prizes for Hens and for Single Cocks.

Now begin the *Game* classes. Although among the most important in an Exhibition, and although from their numbers and merit they deserve all the praise that can be given, yet in the report of a Show they occupy but little space. It can only be said, they were as usual all shown in perfect condition, and that each breed held its own. Fortunately for those who have to report, certain names are in themselves an eloquent comment in this as in other classes. Thus, when we give the names of Messrs. Camm, Marks, Moss, Archer, Hindson, Mason, Dawson, and Ballard, as first; Messrs. Cruwys, Monsey, Mathew, Cox, Moss, Burgess, Langdale, and Frere, as second; and Messrs. Worrall, Camm, Vernon, Hornby, Swift, Moss, Mathew, House, Ballard, and Burgess, as third; it will be understood that all the most celebrated of our yards sent their representatives. While we commend them all, we are bound to say, there were very unusually good specimens of *White*, *Piles*, and *Duckwings*. *Black* and *Brown Reds* seem as near to perfection as may be.

There would appear to be some almost insuperable difficulty in procuring *Golden-pencilled Hamburgs* with perfect combs. The breed was numerous represented, and the pens were above the average; but there were none such as we see sometimes, nor were they as good as at Birmingham. It will be making an unusual assertion when we say the adult *Silver-pencilled* were better than the chickens; but it was so, and Mr. Kerr's was an unusually good pen.

With this exception we do not consider the *Pencilled Hamburg* classes strong as they have been of late.

The *Spangled* were much better, and the contest was close for first and second prizes, but there were many imperfect combs here. Messrs. Bamforth, Worrall, and Lane took first and second prizes.

The *Silvers* were very numerous; and although the prize birds were not, perhaps, better than the *Golden*, yet, as classes, they were certainly more meritorious.

There were twenty-one pens of *Chickens*. Messrs. Teebay, Pearse, Thompson, Carter, and Lady Cornwallis, showed good birds.

Messrs. Hyde and Beale took prizes for *Single Cocks*.

Polands were more remarkable for quality than numbers. The different breeds brought thirty-five pens. Messrs. Dixon, Adkins, and Edwards had the lion's share of honour, while we were glad to see one successful exhibitor sent from Dublin.

The *Malays* are always good at the Crystal Palace; but many of the birds shown this year had a sort of skinny dewlap, which we neither understand nor approve. London did not monopolise all the prizes this time; one went to Suffolk and another to Wiltshire.

The "Varieties" were well represented and supplied a good class of *Silgies*. It may also give rise to discussion, inasmuch as it produced what is called a cross between a Spanish hen and a Red Grouse, and a bird bred from them.

The *Golden* and *Silver-laced Bantams* are certainly improving—they were more numerous and better than at preceding Shows. *Blacks* and *Whites* were stronger still, and produced beautiful specimens.

The *Game Bantams* are now assuming large proportions in a catalogue, and we are bound to speak most highly of them. Twenty-three pens competed, and then twenty Game Bantam cocks. Here we must notice Mr. H. D. Bayley's Black Red, which is, we think, one of the best birds we ever saw.

Mr. Breavington reappeared in *White Geese*, his pen weighing 64½ lbs.; while Mr. Mansfield's brought 57 lbs. In Greys, the Marchioness of Winchester's first-prize pen weighed 63 lbs.

There has been a trifling falling off in *Aylesbury Ducks* this year. Out of an excellent class the prize birds weighed respectively 22½, 22, and 21½ lbs., while several highly commended weighed 20 lbs. We do not recollect this year having reached 24 lbs. Mr. Breavington also again was first with *Rouens*—20½ lbs., followed by 20 and 19½ lbs.: this was an excellent class. We are glad to speak well of the *Black Ducks*—it was an unusually good class.

The Marchioness of Winchester and Mr. Smith were first in *Turkeys*, the Rev. T. L. Fellowes taking three prizes. The following are the weights—old birds, 61, 54, 51 lbs.; young, 53, 46½, and 46 lbs. "Various Ducks" produced Ruddy Sheldrakes, White-eyed Ducks, Mandarin and Carolinas. *White Pheasants* brought Golden and Chinese.

There was then a hard contest for seven prizes in the *Game Cock Sweepstakes*. The names of the fortunate will be found in our list. We would gladly give more prominence to the names of the successful throughout our report, but space will not allow it. We trust and believe we have omitted nothing that required especial mention. Exact figures cannot be known at the time we go to press, but we are able to say this has been one of the most successful Shows ever held at the Palace. Mr. Houghton was, as usual, indefatigable; and we believe his anxiety to please, his undeviating politeness, and his constant efforts to promote the comfort of everybody, are fully appreciated by all who visit the Show.

The Judges were G. J. Andrews, Esq., Mr. Hewitt, and Mr. Bailly.

SPANISH.—First and Second, Miss M. L. Rake, Brandon Hill, Bristol. Third, H. Lane, Milk Street, Bristol. Fourth, R. Teebay, Fulwood, near Preston, Lancashire. Commended, Messrs. C. and E. Bedwell, Iford, near Lewes, Sussex; Mrs. H. Fookes, Whitechurch, Blandford, Dorset. *Chickens.*—First, Miss M. L. Rake. Second, J. R. Rodbard, Aldwick Court, Wrington, near Bristol. Third, A. E. Smith, Wish Street, Southsea, Hants. Fourth, H. Lane. Highly Commended, W. R. Bull, Newport Pagnell, Bucks; P. H. Jones, High Street, Fulham; Miss M. L. Rake. Commended, G. C. Atkins, the Lightwoods, near Birmingham; J. Clews, Walhouse Street, Walsall; J. K. Fowler, Prebendal Farm, Aylesbury. *Hens or Pullets.*—First, W. Parrott, Manor Farm, Ford, Aylesbury, Bucks. Second, T. Sheen, Holborn Hill. Highly Commended, J. H. Craigie, Woodlands, Chigwell, Essex; Miss M. L. Rake. Commended, J. Nunn, Orange Street, Bethnal Green Road. *Cocks.*—First and Second, Miss M. L. Rake. Third, R. Wright, Porter's Place, Holloway. Highly Commended, Mrs. J. C. Hall, Surrey House, Sheffield; H. Lane; Miss M. L. Rake. Commended, T. Dunnage, Muswell Hill; P. H. Jones.

DORKING (Coloured).—First, Hon. W. W. Vernon, Ranton Abbey, Stafford. Second, Lady L. Thynne, Muntham Court, Worthing. Third, Capt. Hornby, Knowsley Cottage, Prescott. Fourth, Marchioness of Winchester, Amport St. Mary, Andover. Highly Commended, Marchioness of Winchester; Lady L. Thynne; Rev. J. Boys, Biddenden, Kent; R. Chatfield, Storrington, Sussex. Commended, F. Key, Beverley, Yorkshire. *Hens.*—First, Capt. Hornby. Second, Lady L. Thynne. Highly Commended, G. Chadwin, Tollard Royal, Salisbury. *Chickens.*—First and Fourth, Lady L. Thynne. Second, Marchioness of Winchester. Third, C. H. Wakefield, Malvern Wells. Highly Commended, Lady J. M. Cornwallis, Linton Park, Staplehurst; O. M. Barrett, Stoke St. Mary, Somerset; R. Boys, Eastbourne, Sussex; W. B. Rouse, Wickham Market, Suffolk; W. Syson, Debach, Woodbridge, Suffolk; W. Tester, Green Trees Farm, Balcombe, Sussex. Commended, Capt. H. Townshead, Stretton-en-le-Field; Rev. W. Temple, Hurstbourne Priors, Whitechurch, Hants; R. Chatfield; Mrs. Green, Lower Chelm. *Pullets.*—First, Lady L. Thynne. Second, C. H. Wakefield. Highly Commended, Lady L. Thynne; G. Chadwin, Tollard Royal, Salisbury. Commended, R. Boys.

DORKING (White).—Capt. J. Beardmore, Uplands, near Fareham, Hants, Second, N. Antill, Portsea, Hants. Highly Commended, Mrs. H. Fookes, Whitechurch, Blandford, Dorset; J. Robinson, Vale House, near Garstang. Commended, Rev. C. Gilbert, Hemsby Vicarage, Great Yarmouth; H. Lingwood, Needham Market, Suffolk. *Chickens.*—First, Capt. J. Beardmore. Second, Miss Willcox, Nailsea Court, near Bristol. Highly Commended, Capt. J. Beardmore; Rev. G. F. Hodson, North Petherton, near Bridgewater. Commended, N. Antill; J. McLachlan, King Street, Saucel, Paisley, N.B.

DORKING COCKS (Coloured and White).—First and Second, Lady L. Thynne, Muntham Court, Worthing. Third, G. Botham, Wexham Court, Slough. Highly Commended, Marchioness of Winchester, Amport St. Mary, Andover; Sir Joseph Paxton, M.P., Rockhills, Sydenham; Rev. E. Cadogan, Walton Parsonage, Warwick; J. K. Fowler, Prebendal Farm, Aylesbury; S. Lewry, Pulborough, Sussex; J. Robinson, Vale House, near Garstang. Commended, H. Lingwood, Needham Market, Suffolk.

COCHIN-CHINA (Cinnamon and Buff).—First, J. Cattell, Worcester Street, Birmingham. Second, Mrs. H. Fookes, Whitechurch, Blandford, Dorset. Third, H. Tomlinson, Balsall Heath Road, Birmingham. Highly Commended, J. K. Fowler, Prebendal Farm, Aylesbury; T. Stretch, Marsh Lane, Bootle, Liverpool. Commended, Mrs. A. Horsnail, Strood, Kent. *Chickens.*—First, P. H. Jones, High Street, Fulham. Second, J. W. Kelleway, Merston, Isle of Wight. Third, Mrs. E. Herbert, Powick, near Worcester. Highly Commended, Miss V. W. Musgrove, West Tower, Aughton, near Ormskirk; H. Tomlinson. Commended, Rev. G. Gilbert, Claxton, Norwich.

COCHIN-CHINA (Brown and Partridge-feathered).—First, T. Stretch, Marsh Lane, Bootle, Liverpool. Second, P. Cartwright, Oswestry, Salop. Third, Mrs. E. Herbert, Powick, near Worcester. *Chickens.*—First, Miss V. W. Musgrove, West Tower, Aughton, near Ormskirk. Second, T.

Stretch, Marsh Lane, Bootle, Liverpool. Third, P. Cartwright. Highly Commended, Hon. W. W. Vernon, Ranton Abbey, Stafford.

COCHIN-CHINA (White).—First, R. Chase, Moseley Road, Birmingham. Second withheld. *Chickens.*—First, W. Dawson, Hopton, Mirfield, Yorkshire. Second, A. Peters, the Priory, Fratton, near Portsmouth. Commended, A. Peters.

COCHIN-CHINA COCKS (Coloured and White).—First, E. Tudman, Ash Grove, Whitechurch, Salop. Second, Rev. J. E. Yonge, Eton, Windsor. Highly Commended, Major F. C. Hassard; Rev. J. E. Yonge; G. Johnson, Farnham, Surrey. Commended, T. Tatham, Kingsthorpe, Northampton,

BRAHMA POOTRA.—First, G. Botham, Wexham Court, Slough. Second, R. Teebay, Fulwood, near Preston, Lancashire. Highly Commended, G. Botham; J. H. Craigie, Woodlands, Chigwell, Essex; R. Teebay. Commended, W. G. K. Breavington, Vicarage Farm, Hounslow. *Chickens.*—First, R. Teebay. Second, J. H. Craigie. Highly Commended, G. Botham; J. K. Fowler, Prebendal Farm, Aylesbury. Commended, F. Andrews, Coxbridge, Farnham, Surrey; A. H. Philpott, Bromyard.

BRAHMA POOTRA COCKS.—First, J. H. Craigie, Woodlands, Chigwell, Essex. Second, G. Botham, Wexham Court, Slough. Commended, G. Johnson, Farnham, Surrey.

GAME (White and Piles).—First, J. Camm, Farnsfield, Southwell, Notts. Second, Rev. G. S. Cruwys, Cruwys Morchard Court, Tiverton, Devon. Third, H. Worrall, Spring Grove, West Derby, near Liverpool. Commended, M. Marks, Edgbaston Street, Birmingham; G. W. Moss, the Beach, Aigburth, near Liverpool. *Chickens.*—First, G. W. Moss. Second, J. Monsey, Thorne Lane, Norwich. Third, J. Camm. Highly Commended, T. Goodson, Eastwell, Leicestershire; J. Monsey. Commended, R. R. Clayton, Hedgerley Park, Slough.

GAME (Black-breasted Reds).—First, M. Marks, Edgbaston Street, Birmingham. Second, S. Matthew, Chilton Hall, Stowmarket. Third, Hon. W. W. Vernon, Ranton Abbey, Stafford. Highly Commended, Rev. G. S. Cruwys, Cruwys Morchard Court, Tiverton, Devon; J. Fletcher, Stoneclough, near Manchester; W. R. Lane, Bristol Road, Birmingham. Commended, Rev. F. Watson, Woodbridge, Suffolk; W. Cox, Brailsford Hall, Derby; J. E. Rodbard, Aldwick Court, Wrington, near Bristol; Mrs. H. Sewell, Upton-on-Severn, Worcestershire. *Chickens.*—First, E. Archer, Malvern. Second, W. Cox. Third, Capt. W. Hornby, Knowsley Cottage, Prescott. Highly Commended, J. Bradwell, Southwell, Notts; W. Cox; J. Fletcher, Stoneclough, near Manchester; M. Marks, Edgbaston Street, Birmingham. Commended, Rev. T. L. Fellowes, Beighton Rectory, Acle, Norfolk; W. Ballard, Woodcote Lodge, Leamington.

GAME (Brown-breasted and other Reds, except Black-breasted).—First and Second, G. W. Moss, the Beach, Aigburth, Liverpool. Third, R. Swift, Southwell, Notts. Highly Commended, Capt. W. Hornby, Knowsley Cottage, Prescott; J. Fletcher, Stoneclough, near Manchester. *Chickens.*—First, E. Archer, Malvern. Second, T. Burgess, jun., Burley Dam, Whitechurch, Salop. Third, G. W. Moss. Highly Commended, J. Fletcher. Commended, J. Biller, Royston, Herts.

GAME (Duckwings and other Greys and Blues).—First, J. Hindson, Barton House, Everton, Liverpool. Second, G. W. Langdale, Leckonfield Park House, Beverley. Third, S. Matthew, Chilton Hall, Stowmarket. Highly Commended, W. Dawson, Selly Oak, Birmingham; F. Hardy, Prince of Wales Inn, Bowling Old Lane, Bradford; H. Worrall, Spring Grove, West Derby, near Liverpool. *Chickens.*—First, P. Mason, Brightlinsea Hall, Essex. Second, Mrs. H. T. Fiere, Bureton Rectory, Diss. Third, J. W. House, Anderson, Blandford, Dorset.

GAME (Blacks and any other variety).—First, W. Dawson, Selly Oak. Second, W. Ballard, Woodcote Lodge, Leamington. Highly Commended, H. Parry, Ellesmere Port, near Chester. Commended, W. Ballard. *Chickens.*—First, W. Ballard. Second, T. Burgess, jun. Highly Commended, W. Dunning, Newport, Salop; M. Marks.

HAMBURGH (Gold-pencilled).—First, W. Pierce, Hartford, near Northwich. Second, W. Cannan, Bradford, Yorkshire. Third, W. H. Dyson, Snap, Horton Bank Top, Bradford, Yorkshire. *Chickens.*—First and Second, J. Munn, Beath Hill, Stacksteads, near Manchester. Third, W. C. Worrall, Rice House, Knotty Ash, near Liverpool. Highly Commended, R. R. Clayton, Hedgerley Park, Slough; R. Oxley, Windsor.

HAMBURGH (Silver-pencilled).—First, W. H. Kerr, Worcester. Second, Rev. T. L. Fellowes, Beighton Rectory, Acle, Norfolk. Third, Miss A. Keable. Commended, Rev. J. A. Briggs, Eastgate House, Tenterden. *Chickens.*—First, W. Cannan, Bradford. Second, G. Dait, Halloughton, Southwell, Notts. Third, Master T. B. Keable, Rowdesfield, Devizes. Commended, R. Oxley, Windsor, Berks.

HAMBURGH COCK (Gold or Silver-pencilled).—First, J. Munn, Heath Hill, Stacksteads, near Manchester. Second, F. Armstrong, Haynes, Bedford. Commended, W. Bennett, Betchworth.

HAMBURGH (Gold-spangled).—First, W. R. Lane, Bristol Road, Birmingham. Second, W. C. Worrall. Third, J. Bamforth, Holmfirth, near Huddersfield. *Chickens.*—First, J. Bamforth. Second, H. Carter, Upperthong. Third, G. Brook, Huddersfield.

HAMBURGH (Silver-spangled).—First, R. Teebay, Fulwood, near Preston, Lancashire. Second, H. Carter, Upperthong, near Holmfirth. Capt. J. Beardmore, Uplands, near Fareham, Hants. *Chickens.*—First, W. Pierce, Hartford, near Northwich. Second, R. S. Thompson, Adelaide Terrace, Windsor, Berks. Third, Lady J. M. Cornwallis, Linton Park, Staplehurst. Highly Commended, Lady J. M. Cornwallis; H. Beal, Wexham, Slough. Commended, W. Cannan, Bradford, Yorkshire.

HAMBURGH COCKS (Gold or Silver-spangled).—First, S. H. Hyde, Taunton Hall, Ashton-under-Lyne. Second, H. Beal, Wexham, Slough. Highly Commended, Rev. T. L. Fellowes, Beighton Rectory, Acle, Norfolk; J. Bamforth, Holmfirth, near Huddersfield; W. C. Worrall, Rice House, Knotty Ash, near Liverpool. Commended, H. Carter, Upperthong, near Holmfirth.

POLAND (Black with White Crests).—First, J. Dixon, North Park, near Bradford, Yorkshire. Second and Third, T. P. Edwards, Lyndhurst, Hants. Highly Commended, T. P. Edwards.

POLAND (Gold).—First, J. Dixon, North Park, near Bradford, Yorkshire. Second, A. E. Smith, Wish Street, Portsea, Hants. Third, R. P. Williams, Hollybrook, Clontarf, Dublin.

POLAND (Silver).—First, J. Dixon, Bradford, Yorkshire. Second and Third, G. C. Adkins, the Lightwoods, near Birmingham. Highly Commended, P. H. Jones, High Street, Fulham; R. P. Williams, Dublin.

POLAND COCKS.—First, G. C. Adkins, the Lightwoods, near Birmingham. Second, T. P. Edward, Lyndhurst, Hants. Highly Commended, F. Hardy, Bradford.

MALAY.—First, A. G. Brooke, Cumberland Street, Woodbridge, Suffolk. Second, A. F. M. Druce, Eynsham, near Oxford. Highly Commended, J. Rumsey, High Street, Shadwell. Commended, A. G. Brooke; J. Rumsey. **CHICKENS.**—First, N. Sykes, jun., Globe Road, Mile End. Second, J. J. Fox, Devizes, Wilts. Highly Commended, A. G. Brooke; J. Rumsey.

ANY OTHER DISTINCT BREED.—First, Rev. T. L. Fellowes, Norfolk (Black Hamburgs). Second, Lady L. Thynne, Worthing (China Silk Fowl). Third, C. Coles, Fareham, Hants (Andalusian). Fourth, W. Dawson, Yorkshire (Cuckoo Cocker). Commended, W. H. Kerr, Worcester (China Silk Fowl); W. Dawson, Yorkshire (Sultan's Fowls); Mrs. St. John, Oakley Cottage, Basingstoke (Sultan's Fowls); W. Gilmour, St. Mungo Street North, Glasgow (Old Scotch Greys).

BANTAMS (Gold-laced).—First, T. W. Hill, Haywood, near Manchester. Second, Rev. G. S. Cruwys, Devon. Highly Commended, T. H. D. Bayly, Ickwell House, near Biggleswade, Beds; M. Leno, jun.

BANTAMS (Silver-laced).—First, M. Leno, jun., Hertfordshire. Second, Miss G. Everett, Gibraltar Cottage, Monmouth. Highly Commended, Lady J. M. Cornwallis; Miss E. Hodson, North Petherton; J. Martin, Worcester; L. Peters, Moseley, near Birmingham.

BANTAMS (White, clean legs).—First, Miss L. A. Peters, Philip Street, Birmingham. Second, T. H. D. Bayly, Beds. Highly Commended, Rev. G. S. Cruwys; H. Loe, 39, High Street, Winchester.

BANTAMS (Black, clean legs).—First, J. Billyeald, Hyson Green, near Birmingham. Second, J. Dixon. Highly Commended, G. Bradwell, Southwell, Notts. Commended, Rev. G. S. Cruwys; S. Ridley.

BANTAMS (Game).—First, W. S. Forrest, Greenhithe, Kent. Second, J. Camm, Farnsfield, Southwell, Nottinghamshire. Highly Commended, T. H. D. Bayly, Biggleswade; W. R. Lane. Commended, W. Ballance, Taunton, Somerset; R. Hawksley, jun., Nottinghamshire; C. Horsfall; J. Monsey, Thorne Lane, Norwich.

BANTAMS (any other variety).—First, G. Daft, Halloughton, Southwell, Notts. (Booted Bantams). Second, Lieut.-Col. Ward, R.A., Woolwich (White-booted Bantams). Highly Commended, Miss L. A. Peters (White-booted Bantams).

BANTAM COCKS.—First, T. H. D. Bayly, Biggleswade. Second, J. Monsey, Thorne Lane, Norwich. Highly Commended, R. Hawksley, jun.

GEES (White).—First, W. G. K. Breavington, Vicarage Farm, Hounslow. Second, W. Manfield, jun., Dorchester. Highly Commended, C. J. Bastard, Herts; W. Manfield, jun.

GEES (Grey and Mottled).—First, Marchioness of Winchester, Andover. Second, Mrs. M. Seamons, Aylesbury. Highly Commended, Mrs. E. Herbert, Powick, near Worcester.

DUCKS (Aylesbury).—First, J. Weston, Aylesbury. Second, Mrs. M. Seamons. Third, J. Harris. Highly Commended, Rev. J. Boys, Bidden-den, Kent; Mrs. M. Seamons; W. Syson, Debach, Woodbridge, Suffolk. Commended, Mrs. Pattison, Maldon, Essex.

DUCKS (Rouen).—First, W. G. K. Breavington, Vicarage Farm, Hounslow. Second, J. K. Fowler, Prebendal Farm, Aylesbury. Third, G. Daft, Halloughton, Southwell, Notts. Highly Commended, J. H. Braikenridge, Chew Magna, near Bristol; W. G. K. Breavington; W. H. Denison, Hardwicke Cottage, Woburn, Beds. Commended, Rev. T. L. Fellowes, Beighton Rectory, Acle, Norfolk.

DUCKS (Black).—First, G. S. Sainsbury, Devizes. Second, Capt. J. Beardmore, Uplands, near Fareham, Hants. Third, Hon. Cecil Howard, Charlton House, Malmesbury.

DUCKS (any other variety).—First, Marchioness of Winchester (Carolina). Second, T. H. D. Bayly, Ickwell House, near Biggleswade, Beds. Highly Commended, Marchioness of Winchester (White Eyes); C. Baker, the Pheasantry, Beaufort Street, Chelsea (Carolina and Mandarin).

ORNAMENTAL WATER FOWL.—Prize, T. H. D. Bayly (Sebastopol Geese). **TURKEYS.**—First, Marchioness of Winchester (Cambridgeshire). Second, Rev. T. L. Fellowes, Beighton Rectory, Acle, Norfolk (Cambridgeshire). Third, J. Grinnell, Ellesborough, Wendover, Bucks (Black Norfolk).

POULTS.—First, J. Smith, Breder Hills, Sedgbrook, Grantham (Cambridgeshire). Second and Third, Rev. T. L. Fellowes (Cambridgeshire). Highly Commended, Mrs. W. J. Lloyd, Langleybury, Watford, Herts (White); Miss J. Milward, Newton St. Loe, near Bath (French).

PHEASANTS (Gold and Silver).—First, S. Betty, 1, Park Street, Gloucester Gate, Regent's Park. Second, C. Baker, Chelsea. Highly Commended, Capt. J. Beardmore, Uplands, near Fareham, Hants.

PHEASANTS (any new variety).—Prize, M. Leno, jun., the Pheasantry, Markyate Street, Herts (Chinese Ring-neck).

SWEEPSTAKES FOR GAME COCKS.—First, A. Nugent, North End, Portsmouth. Second, J. B. Chune, Coalbrookdale. Third, W. H. Swann, Farnsfield, Southwell, Notts. Fourth, Capt. W. Hornby, Knowsley Cottage, Prescot. Fifth, W. Cox, Brailsford Hall, Derby. Sixth, J. Hindson, Barton House, Everton, Liverpool; Seventh, Hon. W. W. Vernon. Highly Commended, E. Archer, Malvern; J. Fletcher, Stoneclough, near Manchester; W. Iliff, Kilsby, near Rugby; Mrs. H. Sewell, Upton-on-Severn, Worcestershire. Commended, J. R. Rodbard; R. Woods, Osberton, Worksop.

PIGEONS.

POWTERS OR CROPPERS.—Cocks of any colour.—First, Master M. Rake, Brandon Hill, Bristol. Second, T. H. Evans, Canterbury Place, Lambeth Walk. Third, W. W. Hayne, St. James Road, Croydon Common. Highly Commended, W. W. Hayne. Commended, W. B. Tegetmeier, Muswell Hill. Hens of any colour.—First, Master M. Rake. Second, F. G. Stevens, Axminster, Devon. Third, G. W. Long, Bentley Place, Kingsland. Highly Commended, T. H. Evans; W. W. Hayne. Commended, T. H. Evans; W. B. Tegetmeier.

CARRIERS.—Cocks, Black and Dun.—First and Second, W. W. Hayne. Third, J. H. Craigie, Woodland, Chigwell, Essex. Very Highly Commended, W. W. Hayne. Highly Commended, Major F. C. Hassard, Gatcomb House, Hilsea, near Portsmouth, Hants; W. F. Cross, High Street, Battersea; W. W. Hayne; F. G. Stevens. Commended, W. W. Hayne; R. J. Wood, Nottingham. (A very superior class.) **COCKS of any other colour.**—First, J. R. Holmes, Lewisham. Second, S. Betty, Regent's Park. Highly Commended, S. Betty; J. R. Holmes. Commended, F. C. Esquilant, Oxford Street. Hens, Black and Dun.—First,

Second, and Third, W. W. Hayne. Very Highly Commended, S. Betty; W. W. Hayne; F. G. Stevens. Highly Commended, S. Betty; W. W. Hayne. Commended, W. W. Hayne; R. J. Wood. (An exceedingly good class.) **HENS of any other colour.**—First, W. W. Hayne. Second, F. C. Esquilant. Commended, W. W. Hayne.

DRAGONS.—Blue.—Prize, G. F. Treadway, Harrow Road, Paddington. Highly Commended, T. Abbott, Norwood Cottage, Dulwich Road, Brixton; W. Squire, Hanwell, Middlesex. Any other colour.—Prize, F. White, Crescent Lane, Clapham Common. Highly Commended, T. G. Grimwood, Stanton House, near Highworth, Wilts; G. Treadway. Commended, Master F. Dart, Myrtle Cottage, Croydon; S. Summerhayes, Taunton. (Good as any class.)

ALMOND TUMBLERS.—First, Master M. Rake, Bristol. Second, R. Walker, Camden Town. Third, Marchioness of Winchester. Commended, E. T. Archer, sen., Forest Hill; F. G. Stevens.

SHORT-FACED MOTTLES.—First, Messrs. Hale & White, Crescent Lane, Clapham Common. Second, F. C. Esquilant.

SHORT-FACED BALDHEADS.—First, M. Wicking, Blackheath. Second, J. W. Edge, Aston New Town, Birmingham. Commended, F. C. Esquilant; M. Wicking.

SHORT-FACED BEARDS.—First, W. Squire, Hanwell, Middlesex. Second, Master M. Rake. Commended, J. C. Brierley, Gelding, near Nottingham; M. Wicking.

SHORT-FACED TUMBLERS.—Self Colour.—First, J. Percivall, Clent Villa, Harborne, near Birmingham. Second, F. C. Esquilant. Highly Commended, F. C. Esquilant. Commended, P. Mason, Brightlinea Hall, Essex.

JACOBIANS.—First, Master M. Rake. Second, M. Wicking. Highly Commended, F. C. Esquilant. Commended, E. Roe, Queen Street, Salisbury; M. Wicking.

OWLS.—Blue or Silver.—Prize, Master M. Rake. Highly Commended, M. Wicking. Commended, C. F. Allison, Friar's Place, Acton, Middlesex; H. Morris, Perry Vale, Forest Hill. Yellow, or any other colour.—Prize, W. Hewitt, jun., Forest Hill. Highly Commended, H. Morris; M. Wicking.

NUNS.—First, T. T. Parker, Charnock, Chorley, Lancashire. Second, M. Wicking, Backheath.

TURBITS.—First, M. Wicking. Second, T. T. Parker. Third, W. Hewitt, jun., Forest Hill. Highly Commended, F. Bunge, jun. (from Rotterdam), Fowkes Buildings, Great Tower Street, City; W. Hewitt, jun.; Master M. Rake; F. G. Stevens, Axminster, Devon; M. Wicking. Commended, H. Child, jun., Birmingham; W. Choyce, jun., Sibson, near Atherstone, Warwickshire.

FANTAILS.—Black.—Prize, Master M. Rake. Commended, J. Baily, jun. White.—Prize, C. F. Allison, Friar's Place, Acton, Middlesex. Very Highly Commended, Miss S. A. Elliott, Taunton. Highly Commended, Miss J. Milward, Newton St. Loe, Bath. Commended, W. Hewitt, jun. (A beautiful class.) Blue.—Prize, S. Menzies. Highly Commended, Marchioness of Winchester. Commended, H. Morris.

BARBS.—Black.—Prize, P. H. Jones, Fusham. Very Highly Commended, F. G. Stevens. Highly Commended, F. T. Wiltshire, Croydon. Yellow, or any other colour.—Prize, Master M. Rake. Very Highly Commended, F. G. Stevens. Commended, J. H. Craigie.

MAGPIES.—First, C. L. Sutherland, Coombe, near Croydon. Second, Miss S. A. Elliott, Taunton. Third, H. Morris, Perry Vale, Forest Hill. (The whole class highly commended.)

TRUMPETERS.—Black Mottled.—Prize, Master M. Rake. Commended, J. C. Brierley, Gelding, near Nottingham; F. G. Stevens; C. H. Muspratt, King William Street. White, or any other colour.—Prize, Master M. Rake.

SPANISH AND LEGHORN RUNTS.—First and Second, C. Baker. Highly Commended, J. H. Craigie; F. G. Stevens. Commended, T. D. Green, Saffron Walden, Essex; E. A. Lingard.

FOR ANY OTHER VARIETY (OBSERVING).—First and Second, F. Bunge, jun. (Yellow, Black, and White Fantails). Third, S. Betty, Regent's Park (Iceland). Fourth, S. Menzies (Blue Russians). Highly Commended, Marchioness of Winchester (Bagonettes or Scandaroon); R. Swift, Southwell, Notts; M. Wicking. Commended, J. Baily, jun. (Shields); H. Child, jun. (A particularly interesting class.)

The Judges beg to express the gratification which the Show has afforded them from its excellence in nearly all the Classes.

RABBITS.

LONGEST EARS.—First, J. Angus, Woolwich (Yellow and White Buck). Second, A. Banks, Piccadilly (Grey Buck).

BLACK AND WHITE.—First H. W. Gostling, jun., Oakley, near Bedford. Second, A. Stedman, Oxted, Surrey. Highly Commended, H. Hindes, jun., Norwich; J. Walkin, Plumstead.

YELLOW AND WHITE.—First, J. Hincks, jun., Birmingham. Second, J. Murrin, Greenwich.

TORTOISESHELL.—First, C. P. Lashmar, Oxted, Surrey. Second, S. Coleman, Birmingham.

BLUE AND WHITE.—First and Second, W. Nott, Chelsea. Highly Commended, S. Coleman, Birmingham; C. P. Lashmar, Surrey.

GREY AND WHITE.—First, N. Norman, Plumstead. Second, H. Hindes, jun., Norwich.

SELF COLOUR.—First, C. Sellen, Surrey. Second, J. Brown, Birmingham. Highly Commended, E. W. Burford, Leicester; N. Norman, Plumstead; C. Sellen, Surrey.

FOR WEIGHT.—First, W. Robinson. Second, H. Morris, Forest Hill.

FOREIGN RABBITS.—First and Second, J. Ashton, Hants.

STEYNING POULTRY SHOW.

(From a Correspondent.)

THIS Show came off on Monday, December 3rd. The poultry in all classes were very good. There was a splendid display of *Dorkings*, both young and old, from the eminent breeders, who carry off the prizes at the largest Shows. Mr. Robert Chatfield, Storrington, Sussex, was first for the old birds. Lady Thynne, Muntham Court, near Worthing, Sussex, stood first for

Chickens and Single Cocks. The Rev. J. Goring, Wiston Park, Sussex, obtained the prize for Single Pullets.

The *Spanish* class was very good. Mr. Charles Bedwell, jun., of Iford, near Lewes, Sussex, carried off the honours in this class. His birds were very good, and, no doubt, will be heard of again as winners at a much larger Show. Some very fine *Turkeys* were exhibited by Mr. Newland, of Sompting, Sussex. Some very beautiful *White Aylesbury Ducks* were exhibited by Mr. Charles Bedwell, jun., for which he carried off the honours. *Lady Thynne* carried off the honours for *Rouen Ducks*. Very excellent *Geese* were shown by Lady Thynne and Sir C. Burrell, of Knet Castle.

Judge—Mr. S. Lewery.

DORKINGS.—First, R. Chatfield, Stonington, Sussex. Second, Rev. J. Goring, Wiston Park, Sussex. Third, E. Stanford. Highly commended, Lady L. Thynne, Muntham Court, near Worthing. *Chickens* (unrestricted as to price).—First, Lady L. Thynne. Second, R. Chatfield. Highly commended, W. Stanford, jun. *Single Cock*.—First, Lady L. Thynne. Second, E. Stanford, jun. Third, Rev. J. Goring. Highly commended, W. Stanford, jun. *Best Cockerel*.—Prize, Lady L. Thynne. Highly commended, Rev. J. Goring. *Best Pullet*.—Prize, Rev. J. Goring. Highly commended, W. Stanford, jun. Commended, Lady Thynne; R. Chatfield.

SPANISH.—First, C. Bedwell, jun., Iford, near Lewes, Sussex. Second, E. Bedwell, Iford, near Lewes, Sussex. Highly commended, Lady L. Thynne and C. Gates, Steyning, Sussex.

FOR ANY OTHER DISTINCT BREED.—First, Lady L. Thynne (*Silgies*). Second, Rev. F. B. Parkes. Highly commended, Lady Thynne; C. Bedwell, jun.

TURKEYS.—First, G. Newland, Sompting, near Worthing, Sussex. Second, Rev. J. Goring. Highly commended, C. Newland.

DUCKS (*Aylesbury*).—Prize, C. Bedwell, jun. Highly commended, Lady L. Thynne.

DUCKS (*Rouen*).—Prize, Lady L. Thynne. Highly commended, Sir C. M. Burrell, Bart.; C. Bedwell, jun.

GESE.—Prize, Sir C. M. Burrell, Bart. Highly commended, Lady L. Thynne.

THE PRINCIPAL GAME EXHIBITORS, AND WHAT THEY DID AT BIRMINGHAM.

I THINK the following table may interest some of your readers. I have not attempted to fix the relative value of each exhibitor's winnings, neither have I noticed those who exhibit less than four pens.

| Name of Exhibitor. | No. of Prizes gained. | No. of Pens Highly Commended. | No. of Pens Commended. | No. of Pens Shown. | No. of Pens Noticed by the Judge. |
|------------------------|-----------------------|-------------------------------|------------------------|--------------------|-----------------------------------|
| Archer, Mr. | 6 | 2 | 1 | 10 | 9 |
| Baker, Mr. J. M. | — | 1 | — | 8 | 1 |
| Bullock & Rapson | 1 | 2 | — | 4 | 3 |
| Cargey, Mr. | 1 | 1 | 3 | 7 | 5 |
| Dawson, Mr. | 4 | 2 | — | 7 | 6 |
| Doncaster, Mr. | 2 | — | — | 4 | 2 |
| Fletcher, Mr. | 1 | 5 | 1 | 8 | 7 |
| Hornby, Mr. | 3 | 1 | — | 4 | 4 |
| Jennings, Mr. | — | 1 | — | 5 | 1 |
| Lucas, Mr. | — | 1 | 1 | 4 | 2 |
| Moss, Mr. | 5 | 7 | 1 | 25 | 13 |
| Robinson, Mr. | 2 | — | — | 4 | 2 |
| Swift, Mr. | 4 | 3 | — | 9 | 7 |
| Smith, Mr. J. P. | 1 | 1 | 1 | 5 | 3 |
| Swann, Mr. | 1 | — | — | 4 | 1 |
| Shield, Mr. | 1 | 1 | — | 4 | 2 |
| Vernon, Hon. W. | 2 | — | — | 4 | 2 |
| Woods, Mr. | 1 | 1 | 1 | 4 | 3 |
| Worrall, Mr. H. | — | — | 1 | 4 | 1 |

I have just one question to ask. Messrs. Greensill & Sons (with a liberality which I hope will be copied) gave a "cup" for the "best pen of Game fowls in the Exhibition." The Committee also gave a "cup" for the best pen of Black or Brown Reds. Messrs. Greensill's "cup" was awarded to a pen of Brown Reds. The Committee's "cup" to a pen of Black Reds. My question is this—If the Brown Reds were "the best birds in the Exhibition," ought they not to have had the Committee's Cup awarded to them, as well as Messrs. Greensill's? An answer will please—A YOUNG COCKEREL.

VALUE OF CHINCHILLAS, HIMALAYAS, &c., AND COST OF KEEP.

In answer to E. Brough. It is the same with Rabbits as with all live stock, they may be kept either to return a profit or at a loss—it depends upon the stock and the management in feeding and breeding. In keeping long-eared Rabbits the main object is to obtain length of ear; and to do that you must have a good strain, which is only to be procured by paying a good price. I know numbers of mechanics in London and the suburbs who

make several pounds annually by keeping these Rabbits, and in several cases pay their rent. A few weeks since I was in the neighbourhood of Woolwich, and called upon one of the fanciers. Not finding him at home I had a long conversation with the good wife, and asked her whether she found Rabbit-keeping profitable. She stated that it was principally upon that her husband, self, and child depended for clothing. She stated within the last five months they had bred two Rabbits, one of which measured 23 inches in the ear, the other 22½ inches, and sold for £10; and several others of a shorter length at 10s. to 20s. each. Their breeding stock consists of three does and a buck. The cost for keep averages 1s. per week. This she deemed a saving more than an outlay; as, since her husband had kept Rabbits he spent his evenings at home instead of the public house, which was a source of comfort to herself and a benefit to their pockets. I know of several similar cases.

The cost of keeping my breeding Rabbits averages 3d. per week in summer, and 4d. and 5d. in winter, when green food is scarce and carrots have to be bought. I, of course, buy in quantity and at the cheapest market. The reason Chinchillas, Himalayas, and Patagonians have paid me better for keeping is that I kept and reared a larger number in courts and warrens; whereas with long-eared Rabbits they must be kept in a warm shed, and only allowed to bring up three or four young ones and suckle them for ten or twelve weeks, thereby only having three or four litters in the year—but this will pay, provided you are as fortunate as the old lady at Woolwich, and have a few long ones. Now, with the other three varieties six or eight litters may be calculated upon, and from thirty-five to forty-five young ones reared, presuming all goes on prosperously; but I think to persons with small space—only with room for two or three breeding Rabbits, the long-eared are the most interesting. The price of Chinchillas is from 12s. to 40s. per couple, according to age, colour, &c. Himalayas, 12s. to 40s. Patagonians pure bred, being very rare and expensive, vary from 20s. to 50s. per couple. Of course, each fancier forms his own idea as to the value of his stock.—R. S. S.

OUR LETTER BOX.

ADULT SPANISH AT BIRMINGHAM.—A reference to the Birmingham prize list will show that we fell into an error in describing the names of the owners of the only "three pens in which there were three perfect." We ought to have stated that one of the three belonged to that well-known successful exhibitor, Mrs. J. C. Hall, of Surrey House, Sheffield. The name of Rake does not appear as a winner with adult Spanish at Birmingham.

GAME COCK (J. G. P.).—As there is no fixed size for a Game cock, so being small is no defect; nor, unless it amounts to dwarfishness, is it a disadvantage. The white feathers would disqualify in a Black or Brown Red or Duckwing. Long-faced Tumbler Pigeons are worthless.

PLUMAGE OF DUCKWING GAME (C. Lewis).—We presume you mean the Silver Duckwing. The cock should have black breast, thighs, and tail, white hackle and saddle, and duck wing. The hen grey body, striped silver hackle, and light breast. Neither must have any red or buff.

KEEPING THE SEXES SEPARATE (Amateur de Voleille).—You may allow the cocks in question to run with the pullets. Birds will grow more if the sexes are kept separate, provided it is done from an early age; but if they were now parted the cocks would pine and lose condition; besides, they are now from seven to nine months old—almost adults, and the season is come when they do not grow much.

HACKLE OF SILVER-SPANGLED HAMBURGH COCK (Idem).—The pure white hackle is not a disadvantage in a Silver-spangled Hamburg cock. We are glad to hear your opinion of laced wings, but the comparison between the Bantam and Hamburg cannot hold, because one is a made fowl and the other is a breed. More Hamburgs are ruined by patches of white than patches of black.

YOUNG RABBITS UNHEALTHY (Novice in Rabbit-keeping).—Are the young Rabbits you mention bred by yourself, or are they bought ones? From the description I should think they have received some change in warmth, or, perhaps, they have been physicked. I should advise grey peas soaked in water till they sprout to be given once a-day, and barley meal scalded with water and mixed stiff with a little salt. Rabbits that drink their own water seldom get fat. I do not advocate physic for Rabbits, therefore refrain from giving recipes. Despony's work is in the hands of the translator.—R. S. S.

LONDON MARKETS.—DECEMBER 17.

POULTRY.

There is but a dull trade. The supply is limited, as is mostly the case before Christmas.

| Each—s. d. | s. d. | Each—s. d. | s. d. |
|---------------------|-------------|------------------|------------|
| Large Fowls | 4 0 to 4 6 | Pheasants | 4 0 to 4 6 |
| Smaller Fowls | 3 0 " 3 6 | Partridges | 2 0 " 2 3 |
| Chickens | 2 0 " 2 3 | Grouse | 2 0 " 0 0 |
| Geese | 6 0 " 6 6 | Pigeons | 0 8 " 0 9 |
| Ducks | 2 6 " 3 0 | Hares | 3 0 " 3 6 |
| Turkeys | 10 0 " 15 0 | Rabbits | 1 4 " 1 5 |
| Hen do. | 5 0 " 7 6 | Wild ditto | 0 8 " 0 9 |

WEEKLY CALENDAR.

| Day of M'nth. | Day of Week. | DECEMBER 25—31, 1860. | WEATHER NEAR LONDON IN 1859. | | | | Sun Rises. | | Sun Sets. | | Moon Rises and Sets | Moon's Age. | Clock before Sun. | | Day of Year. |
|---------------|--------------|------------------------------|------------------------------|-----------|-------|-----------------|------------|---------|-----------|----|---------------------|-------------|-------------------|--|--------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | | | | |
| 25 | TU | CHRISTMAS DAY. | 29.009—28.651 | deg. deg. | | | m. h. | m. h. | m. h. | | | | m. s. | | |
| 26 | W | ST. STEPHEN. | 29.393—28.598 | 45—36 | S.W. | ·45 | 8 af 8 | 53 af 3 | 39 m. 5 | 13 | | | 0 35 | | 360 |
| 27 | TH | ST. JOHN THE EVANGELIST. | 29.308—29.121 | 44—29 | N. | — | 8 8 | 54 3 | 47 6 | 14 | | | 1 4 | | 361 |
| 28 | F | INNOCENTS. | 29.246—29.195 | 49—33 | S.W. | ·10 | 8 8 | 55 3 | 44 7 | 15 | | | 1 34 | | 362 |
| 29 | S | Velvet duck comes. | 29.348—29.166 | 50—37 | S.W. | ·21 | 9 8 | 55 3 | rises | ○ | | | 2 3 | | 363 |
| 30 | SUN | 1 SUNDAY AFTER CHRISTMAS. | 29.595—29.495 | 53—43 | S.W. | ·08 | 9 8 | 56 3 | 44 a. 5 | 17 | | | 2 32 | | 364 |
| 31 | M | Russian Violet still blooms. | 29.693—28.622 | 55—44 | S.W. | ·09 | 9 8 | 57 3 | 6 7 | 18 | | | 3 1 | | 365 |
| | | | | 57—52 | S.W. | ·02 | 9 8 | 58 3 | 30 8 | 19 | | | 3 30 | | 366 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 43.2° and 31.3° respectively. The greatest heat, 58°, occurred on the 25th, in 1827; and the lowest cold, 8°, on the 31st, in 1857. During the period 155 days were fine, and on 76 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

Artichokes, see that they are securely covered, to prevent them from being injured by frost. *Cauliflowers*, the young plants in frames to be protected from severe frost by covering the lights with mats or long litter. If there are any plants on the open borders, protect them with arched sticks and mats. *Celery*, lay a coating of long dung over the ridges of that required for use, to preserve it from frost. *Herbs* may be taken up and planted in boxes or pots, and introduced into heat as wanted for use. *Lettuce*, watch narrowly for slugs, as they are particularly fond of them. *Mushrooms*, horse-droppings should now be saved for spring beds: this is the best time for saving them, as horses generally get more dry food now than during summer. *Rhubarb*, keep up a succession of this most useful esculent by potting old roots, and introducing them into any forcing-house, maintaining a heat of 60°.

FRUIT GARDEN.

Prune Gooseberries, Currants, and Raspberries in open weather. When the frost sets in lay a coat of rotten dung around every bush; where the Gooseberry and Currant trees are old and infested with moss, if a good dredging of quicklime is applied when the bark is moist it will destroy it, and render the stems clean, and the bark healthy. Proceed with pruning and nailing on the walls at all favourable opportunities. If any of the wall trees are infested with scale wash them with a mixture of soft soap, tobacco water, with an addition of lime, to give consistency to the mixture, and to show that no part of the tree is missed in dressing. To be applied in dry weather, and before the trees are nailed. All newly-planted fruit trees to be mulched over the roots, and standards to be securely staked, and to be afterwards frequently looked to, as they are sometimes apt to get loose, and to rub against the stake, which, if not timely prevented, will do the tree a serious damage.

FLOWER GARDEN.

Have an eye to the protection of tender things here. The coverings of tender shrubs to be occasionally opened on favourable opportunities, to dispel damp; but by no means to allow the sun to shine upon such things. Attend to the compost-heaps in frosty weather, as, by repeatedly removing the frozen surface, and piling it up every morning, it will be both ameliorated and many of the insects and their eggs will be destroyed.

STOVE.

The *Ixoras* to be elevated near the glass, with plenty of air to set their bloom, and to be kept moderately dry. *Allamandas*, *Stephanotis*, &c., to be potted and trained, preparatory to starting after Christmas; and the staking of all specimen plants to be proceeded with as soon as possible. Keep a moderate heat of from 50° to 60°.

GREENHOUSE AND CONSERVATORY.

While we take care to protect the plants from frost it

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is also necessary to be careful to avoid overheating the houses, and to give air at all favourable opportunities. Water to be given cautiously, and in the morning; but no plant to be allowed to suffer for the want of it. *Camellias* now swelling their flower-buds to be rather liberally supplied with water. Where the *Camellias* are planted out in the border of the conservatory they should be carefully examined, and if any signs of dryness are apparent, fork up the soil lightly, and give them a good soaking of soft, tepid water. Similar treatment may be applied with advantage to many other border plants. See that the young stock of *Heliotropes*, *Scarlet Geraniums*, *Persian Cyclamens*, and other such plants for winter use have light situations, and regular attention with water.

PITS AND FRAMES.

Keep the stock well ventilated, and the surface soil of the pots frequently stirred. If the *Verbenas* and similar plants are infested with mildew, dust them with sulphur. It is necessary to keep these structures as dry as circumstances will permit; but if any are suffering from damp without means of correction they should be removed to other quarters where a drier temperature is kept.

W. KEANE.

CROSS-BREEDING FRUITS—FRUIT-TREE CUTTINGS.

PLUM TREES ON OWN ROOTS.

MILLER once said that "in treating of fruits, it is absolutely necessary to enumerate their varieties." Also, that "the directions as to the method of cultivating them through their different stages should be such as by long experience he had found to succeed best, *whatever may have been the success of some late projects for five or six years.*" Fruit is so plentiful this season that I am interested in filling all my Christmas-boxes with fruit in some shape or other. And the first shape in which fruit can be more valuably treated is its origin, and the second shape that of its increase or propagation.

Well, then, what is the origin of the Noblesse Peach, the Elruge Nectarine, the Green Gage Plum, the Ribston Pippin, or the Auchan Pear—the best late Pear to be had in or about Inverness in 1820, when I used to stew Pears for a side dish in the third course of a courting dinner? My own private opinion has been for the last thirty-five years, that the manner of improving any fruit from a wilding to a first-rate dessert article has never yet been rightly accounted for by any one; and more than that, I am quite certain that I shall die in the faith and firm opinion that every word in every book in the English language, on the method of improving any one kind of fruit, is in direct opposition to the way that Nature did that branch of progressive creation, if you will allow that expression, apart from all ideas of the "Vestiges of Creation."

"Whatever may have been the success of some late projects," as Miller said, the project of improving fruit for the table has not yet gone beyond crossing the most

likely kinds, as Mr. Knight practised and recommended. But crossing, as we all know, or ought to know, can only transmit such inheritance as has already been obtained, or stamped on the character, or that degree of improvement, by some previous means in the secrets of Nature. How was the savage Sloe or sour Crab converted from the wilding to that degree of improvement which could be made available by the application of the pollen? Sloes are Sloes and Crabs are Crabs from the beginning to this hour, and yet as good fruit had been got from them before pollen and crossing were known to us as have since been brought on the stage by their means.

The improvement of fruit by means of crossing appears to me to be only a quicker mode of obtaining that improvement which generations before us had the power and the means of procuring for themselves by a much slower process. Now, if their power and their means were more fully understood by us, which I maintain they are not, and we were to apply them to the parents and offspring of crossed fruit, we ought to make sure work of our seedlings—at least, much more sure than has yet been obtained. Most of my garden acquaintances at the time of the passing of the Emancipation Act, in 1829, knew that my young notions were for some years directed to experiments on all kinds of fruit under a scientific patron, who was an intimate friend of Mr. Knight on his right, and of Mr. Williams, of Pitmaston, on his left. The three often met on the subject of their hobby, and after every such meeting, or consultation, or conflict of opinions, I was pretty sure of my task—a fresh set of experiments; and if we had all lived together to this day, I might be able now to give a better version of the ways of Nature in the amelioration of the wildings than is to be found anywhere in print. As it is, I can go no farther than I have just said, the mere assertion of an opinion, that what is laid down by physiologists as the foundation of improvement in fruits is entirely different from the way Nature has been at work with them since they were wildings. That opinion has been in black and white since 1836, when I ceased from my fruit labours so far, and whatever be its worth or value it is not a new or hasty conclusion on my part.

All that, however, is merely a preface to a practical application to some fruit trees of an early “project.” In the olden times all manner of cuttings were made with one joint of the old or two-year-old wood at the bottom. The first cutting I ever made was that way—it was of a *Rhododendron hirsutum*. It lived seven months under my treatment without making a root; and if it had lived on to this day, the chances are it would be just as far from making a plant. Two years after that, the gardener of Sir Thomas Dick Lauder, at Relucas, on the Findhorn River, told me what I learned for the first time—that it was not at all essential to success to have a joint of the old wood at the bottom of a cutting. This was about the end of July, and he was then finishing off about fourteen or sixteen thousand cuttings of the common Laurel—the crop of one season, and not one of the cuttings he assured me had an old joint. Sir Thomas first put him “up to it.”

The question has not yet been raised whether fruit trees or any kind of them would do better on their own roots than on stocks, like having Roses on their roots. The stocks for Apples, Pears, Plums, and Cherries are not always more hardy than the kinds worked on them. The Peach and Nectarine are worked on Plum stocks, because the Plum stocks are more hardy, and therefore more suitable to our soil, and climate than the Almond or any variety of the Peach, on which they would, probably, live longer and in better health in a climate congenial to their less hardy nature. The Fig is still “worked” on its own roots, although by Nature they would seem to need soil quite as warm as the roots of the Peach. The Vine, also, is still held on its own roots, although it is well known there are other kinds of

Grape Vines with a much more hardy constitution on which it would pay to work them for our vineries. But for Peach-houses and for orchard-houses with trees in pots, the roots of Peaches and Vines receive as much, if not more, heat and less cold than is natural to them in their own natural climate: therefore, knowing as we do that all stone fruit, as the Plum, Peach, and Cherry, are shorter-lived and more liable to gum when worked than when growing on their own free roots from the kernel in a suitable soil and climate, would it not be a point of some advantage to have all the kinds of stone fruit on their own roots for the orchard-house culture, and for all in-door work?

I think there can be no question on this head of my subject at least. Then the question whether stone fruit, under particular circumstances, would not do better on their own roots is thus raised, and I have an answer to it in the affirmative in one particular instance—that of Plums; and I am assured by a good gardener who has followed the practice for the last twenty-five years, that all sorts of Plums will come from cuttings as freely as Gooseberries; and that bearing-trees for the garden, or fruiting-bushes of Plums for the orchard-house, can be had from cuttings in less time than by any of the modes of working them on stocks, and the experience of twenty-five years confirms this, “whatever may have been the success of some late projects,” as Miller puts it. And I have been strongly recommended to try the plan in the Experimental Garden by the inventor himself, Mr. A. McKelvie, the gardener at Stevenstone, near Torrington, from whose letters I give the subjoined extract with his own free will and consent.

“In return for a Christmas-box of *Esperiones*, or part remuneration, you may inform the fruit-growing readers of *THE COTTAGE GARDENER*, that the best way to grow Plums is to have the trees on their own roots; and the best time and way to propagate them is in November or December, by taking two-year-old wood for cuttings (and the stronger they are the better for this method), shortening all the fruit-spurs, or the young wood of side-shoots, to one bud or joint from the wood of the cutting. Any garden ground suitable for Plums will do to put these cuttings in, and the only necessary preparation required is to tread down the soil firmly about them, so as to have them as firm as a stake, which each of them will then resemble except the roughness left by the close pruning. They should be inserted eight inches in the ground, and they may be from one foot to five feet out of the ground, according to the length of the shoots or branches fixed on for the purpose. Ninety out of a hundred will grow; but if last season's or one-year-old wood is used, ninety-five per cent. of them will die.” He said he was read in books from Daniel to Donald's, without meeting with the case in point; but “he does not presume to say that this is a new idea,” so I shall have to sustain it for him as such.

Again, as to the particular method of preparing the bottom end of the cuttings, “he never looked upon that as of much consequence; but there is a little advantage in taking off a slice three inches long from each or opposite sides at the bottom, merely taking off the bark and a thin portion of the wood just under the bark. The roots issue all round these cuts from the bottom itself, and from the cut-in spurs.” And again, “Should any of our lady readers wish to try their hand at this mode of propagation, they may sharpen the cutting just like a flower-stake, which will make it hold firmer in the ground, and also present a greater amount of edge of bark for the emission of roots than if it were merely cut level across at the bottom in the usual way.”

In another communication on the after-management of these cuttings occurs the following highly philosophical remark:—“The cuttings, or young trees, ought to stand two seasons in the same place to gain sufficient strength for the roots, and the shoots they make the first and

second year should be cut back to two or three eyes. *This pruning should not be delayed one day later than the leaves are off.*" The italics are mine, to confirm the sentence of the early-autumn pruning of all trees or bushes which one desires to see getting stronger and more strong at each successive break, or every spring. The first two weeks in November are the best time for putting in these cuttings; but with ordinary care they will answer all through December. But Mr. McKelvie has kindly promised to give us a paper on the advantages of the system, and said that October would be the best time to put people in mind of the practice. But, bless you, who knows who will be alive then? The best time of the whole year to have it all out would be with our Twelfth-Night cakes.

Till then, and to the end of time, my warmest thanks are due and will be paid to the authorities of the Kensington Gore new Garden for a move which I had often called for in these pages, and which they have just determined upon—and that was, and is to be, to teach honest people how to place the dessert on the dinner-table, which, to my own personal knowledge, is a branch of our calling hardly yet out of the wilding state. We beat the best of them in growing the finest fruit for our climate; we force better fruit than Nature can or has ever furnished; and yet I have seen the shine taken out of us and of all this by the mere dishing of the fruit, and the way it had been arranged on the table. The old Horticultural Society had no taste for fruit or flower-gardens, beyond going into a fruit-room to cut and try kinds against each other, or to keep the borders full of written tallies, whether there were plants or not; and although they gave handsome prizes for competitors with fruit, they never required to see how such or such a "collection" could be split up for the dessert—the final triumph of all our exertions. I never would give a straw to the best collection of fruit I ever saw exhibited upon their tables, unless I could turn it into a well-balanced dessert. Now, however, great encouragement is to be given to dessert arrangements, and all will see it, and many will learn the best lessons of the garden there. D. BEATON.

MANAGEMENT OF YOUNG CALCEOLARIAS.

"E. A. W." has now a quantity of fine young plants, but they appear to have only one stem each. Should they be nipped at the top to make them throw out others, or will this prevent their running up for flowers? The plants she sees in perfection usually have many flower-stems, and she cannot from such succeed in raising any like them.

[Your Calceolarias are growing as they ought. Let them proceed their own way till the middle of February, and then top them, if they are bedding Calceolarias; but if they are seedlings of herbaceous sorts to flower in pots, you must stop them a month earlier, or according to their size, and accordingly as you want them to bloom early or late.]

GISHURST COMPOUND—WIRE DRAINAGE CAP—RIDDELL'S BOILER.

DOES Mr. Rivers in his recommendation to paint orchard-house trees in January with Gishurst, eight ounces to the gallon, intend that it should remain on altogether? And would it be imprudent to apply it to shoots that are not perfectly brown, few having attained complete ripeness during the past autumn? I find a downy substance like mould upon the twigs of my trees. It has been impossible to give much air during the late damp season, supposing it to arise from moisture; but is it important that any remedy be applied?

To those who cannot obtain the proper orchard-house pots pierced with five holes, it will be found very convenient in supporting the pieces of tile or potsherd required for drainage, to cover the one large hole with a ring of wire made quite rudely, and with wires crossing it at right angles to each other.

With regard to slight heating, I fancy that Riddell's slow-

combustion boiler would be found most convenient and economical, though in its first expense involving more outlay than the generality of stoves. It consists of two concentric upright cylinders, the central one holding the fire, and the outer one water. It will burn for thirty-six hours without attention. The fuel used is small coke or cinders.—W. T. G.]

[The safest way is to wash off the Gishurst Compound after it has been on about twenty-four hours.—Eds. C. G.]

EMPLOYING HOTHOUSES FOR PROFIT.

I HAVE taken a garden with three hothouses in it, with the idea of making a living out of them. I have had some experience in forcing—in fact, I have been in all the branches of gardening for a dozen years, and I spend a good bit of time in reading THE COTTAGE GARDENER, and I think this a good time of the year for asking these questions.

I will give you a short description of the houses. No. 1 is 30 feet long, 9 feet wide, and 8 feet high at the back; the flue runs parallel with the front wall about 3 feet from it, goes along the west end, and runs along the back wall just clear from it. Of course, it is a lean-to house.

No. 2 is a lean-to, and is 15 feet by 15 feet, and 10 feet high at the back; the fireplace is at the west end, and the flue runs just clear of the wall all round except at the back.

No. 3 is a span-roofed house 41 feet long by 14 feet broad, the gable ends face north and south; there is a path down the centre 3 feet wide, and a flue on each side, and between the side walls and the flues, of course, forms a bed. The side walls are 4 feet high, and the roof 7 feet 6 inches. All the three houses have fixed roofs with wooden ventilators back and front.

Now, I beg leave to ask your opinion what to grow in those houses to profit by them, as I can have them as long as I please.—J. J., Suffolk.

[The three houses you describe are capable, when furnished and well-managed, of yielding a considerable quantity of valuable fruit, and then will return a handsome profit. They, however, alone will not bring you in a sufficient income for a living; but perhaps the garden is tolerably large, and a good soil, and stocked with hardy fruits—Asparagus, Sea-kale, Rhubarb, &c.: if so, there is little doubt that the houses and garden together will pay you well. Then, again, a consideration of importance is, Are you near to a market for the produce? In these railroad days, indeed, valuable fruits—such as Grapes, Peaches, forced Strawberries, early Cucumbers, forced Kidney Beans, forced Asparagus, Sea-kale and Mushrooms, may be carefully packed and sent to the great market—London, where they always are in demand at a fair price. For the common cheaper produce you will, of course, look out for a market near home.

You do not state whether the houses are furnished or not. We, therefore, suppose that they are new, or at least have nothing in them; and we must suppose, also, that the flues are in good order and capable of being used for forcing. We take them *seriatim* as you have described them.

No. 1 is a lean-to house, with a flue three feet from the front wall. This is admirably adapted for an early vinery. The Vines should be planted inside about a foot from the flue. The border should be well drained and formed of the best material—namely, thin turf from an upland pasture, well-decomposed dung one-eighth, leaf mould one-eighth if it can be had, and a fair proportion of broken bones—the whole to be thoroughly mixed; and add a good sprinkling of old lime rubbish, bits of bricks or stones to keep it open; plant in March or April, and do not allow the Vines to bear much till the third year. You may grow a lot in pots trained up the back wall. These will bear, if well grown the first year, a tidy crop the second year.

On a shelf at the back near the roof you may force Strawberries. See what was written on the preparation of Strawberry plants for forcing in back Numbers of THE COTTAGE GARDENER. On a shelf near the front you can force Kidney Beans for two or three years till the Vines come into full bearing, but take great care to keep clear of the red spider both on the Beans and the Strawberries. Cover the flue with flat vessels to hold water when forcing is going on, to yield a moist vapour.

No. 2 is admirably adapted for a Cucumber-house. You can make a hotbed of well-sweetened horsedung about October—or just now if you have not made any use of the house this season. As this hotbed is only intended to give the plants a vigorous start you need not make it more than two feet thick, but let it

be well beaten with the fork till it is quite firm and as solid as you can make it. Cover it over with a layer of rich loam 'o keep down the steam. The plants should be raised previously, and should be good and strong by the time the bed is in order for them. Then make hills in two rows, one near the front and one about the centre. Let them be alternate—that is, the front rows should stand between the plants in the centre row thus— Place a stick to each plant and train them up to the roof; by this plan the back row will have more light than if they were exactly opposite the front row. Another year, if you manage well, you ought to cut Cucumbers on New-Year's day, or even earlier, and those plants will continue bearing to May or June. Then you may have ready a lot of strong plants of Melons. Make hills for them of the strongest loam you can get and plant the Melon plants out, clearing away the Cucumbers entirely. These Melons may be trained up to the roof in the same way as the Cucumbers, and will yield a good crop in August or September. In this house you may propagate, in spaces, any quantity of bedding-out plants you need, in boxes or pans, only directly they are rooted remove them out into a cooler house.

When the Melons have ripened then clear out the plants and dung, whitewash the walls, and wash all the woodwork, and let the house have all the air you can give it. It will then be ready for Cucumbers again when the season arrives. If this house is well managed and you get a fair price for its produce, it will reward you abundantly for your labour and care.

No. 3 is a span-roofed house 41 feet long and 14 feet wide. The most profitable use to which you can put this house is to plant it with Peaches and Nectarines, and train them to a trellis on each side and meeting at the centre. You might also plant a Vine to every other rafter; or if the roof is in one uniform sheet—that is, without rafters, then plant four Vines at each side. These Vines will not shade the Peaches too much, and will give about ninety bunches of Grapes when in full bearing. If you adopt this plan you may obtain a good and certain crop of Peaches and Nectarines by the middle of June, at which time they will fetch a high price in London and elsewhere.

In this house during winter you may keep a large stock of bedding-out plants on the borders, which you will find useful in spring, only you must get them out, when you begin to force the Peaches in February, into a pit or under frames where they can be sheltered from frost by safe covering. If there are back sheds to your lean-to house you might easily convert one into a Mushroom-house, which is a profitable crop if so managed as to come in to production from November to May.

We trust these few hints will help you in your undertaking. If any further information is needed send your queries and we shall be glad to assist you.

VINES for your early house:—Black Hamburgh, Golden Hamburgh, and Muscat Hamburgh.

STRAWBERRIES for forcing:—Black Prince, British Queen, and Keens' Seedling.

PEACHES and NECTARINES for forcing:—*Nectarines*—Elruge and Violette Hâtive. *Peaches*—Early Admirable, Royal George, and Grosse Mignonne.

Early-forcing CUCUMBERS:—Lord Kenyon's Favourite and Sion House.

MELONS.—Trentham Scarlet, Beechwood, and Egyptian Green Flesh.

We cannot recommend where you can obtain trees, seeds, &c. but any respectable firm that advertises in our pages can supply you.—T. A.]

ARRANGEMENTS FOR PROPAGATING.

I HAVE a nine-light pit—say 27 feet in length, heated by "linings," but at present without heat, and occupied with Cauliflower plants, Lettuce, &c., and sundry cuttings housed for the winter. Besides this, I have two lean-to vineries, and a small lean-to greenhouse, all connected, and all heated by hot water from one boiler.

Please to advise me as to the best mode of propagating, taking into consideration my appliances, as explained above. My own idea is to enclose a part of the hot-water pipes in one of the vineries, and place a small tank (with a perforated top) about four or five inches wide, over the pipes, and above that to have the propagating-bed, which would be—say 12 inches wide, and 4 feet or 5 feet in length. When the heat was on for the vinery I should have sufficient for the propagating-bed, but at other

times, when the vinery did not require heat, I should be in a difficulty. Could I have a separate apparatus, such, for instance, as is used in the Waltonian Case, to apply at such times as other sources of heat fail with me? or would it be better to have a separate apparatus altogether, and so be quite independent of the vinery heat?—A YORKSHIREMAN.

[Your plan as respects the vinery will do. When at work it would do quite as well without the tank as with it. Any means you could use for such a purpose in a vinery, when that vinery was not at work, would be apt to start your Vines sooner than you wanted. If you have plenty of manure and labour, you may keep up any heat by dung alone. In your case, however, if there is much propagating required, and especially in winter and early spring, we should prefer heating a part at least of your brick pit either with a flue or a small boiler, with or without a tank. If you could manage to have two platforms, one on each side, and so that you could walk between them, you would find it more convenient. A small door would let you in and out. A small retort boiler, or such a one as was described by Mr. Allen the other week, would heat the half of such a pit, more especially if you still used linings also, but without allowing the steam to enter. You will find full directions for propagating in our columns, window gardening, &c. There are many modes.]

GISHURST COMPOUND.

WILL you allow me to thank "T. S. B." for his kind answer to my query as to how he applied Gishurst, and to say that I much regret not being able to account for its non-success with him in winter dressing? A twenty-years' apprenticeship as an experimentalist (though not in fruit matters), while it teaches caution gives at the same time confidence; so without anxiety, the first free half Saturday between now and this time next month, 150 of my dwarf trees of all sorts taken as they come (all of them being at rest), shall have their annual wash of Gishurst, eight ounces to the gallon; and if "T. S. B." will do me the favour to inspect the trees at blossoming time, he will be enabled to judge for himself as to the result.

I am much obliged for the suggestion as to sending out Gishurst in cakes of definite weight. There are manufacturing difficulties in the way: I will again try, however, to get over them.—GEORGE WILSON.

THE SCIENCE OF GARDENING.

(Continued from page 6.)

THE DISEASES OF PLANTS.

DR. GOOD, the distinguished medical writer, has remarked that the morbid affections to which the vegetable part of the creation is liable are almost as numerous as those which render decrepid and destroy the animal tribes. It would be difficult, perhaps, whatever system of nosology is followed, to place a finger upon a class of animal physical diseases of which a parallel example could not be pointed out among plants. The smut, which ravages our corn crops; the mildew, which destroys our Peas; the murrain of our Potatoes; the ambury, or clubroot, to which our Turnips and other species of Brassica are liable; the shanking, or ulceration, which attacks the stalks of our Grapes, are only a few of the most commonly observed diseases to which the plants we cultivate are liable.

Numerous as are the vegetable diseases, and destructive as they are to the interests of the cultivator, yet no subject connected with his art has obtained so little attention, and never was even trivial attention followed by benefit less important. The reason for this deficiency of benefit is not difficult of detection.

Common experience teaches us that diligence and perseverance, directed by judgment, are the essential preliminaries of success: and these are more particularly requisite in searching for the causes of the diseases and decay of vegetables, because we have fewer guides, and less assistance from the vegetable affected, than we have from a diseased animal—fewer symptoms marking the commencement or seat of the evil. Yet where is the cultivator who ever took a fraction of the care, or paid a decimal of the attention to discover the cause, progress, or remedy of one disease, sometimes bringing destruction upon his harvests, as he does to detect the disorder or discover the panacea for some miserable pig?

The subject is one beset with difficulties, but difficulty is very distinct from impossibility; and the importance of the research is a stimulus to exertion. Human knowledge being acquired by observation and experience—by conversing with the things about us—that is, by noticing them attentively, and recording and reflecting upon the facts they reveal—every gardener should do this, especially whenever he finds his crops diseased. He should record from what soil he obtained his seed; how and in what weather it was committed to the ground; the subsequent culture of the crop; the crops which preceded it; the thermometrical and hygrometrical registries of the seasons through which it has grown; the treatment of the soil; its drainage; the manures employed; the waterings; the pruning; and any other miscellaneous observations his own common sense may dictate. If this were done, vegetable medicine would soon advance more in one year towards that state of reasoned knowledge, which alone deserves the name of science, than it has done during the last century.

As observations multiply, chemistry and physiology will contribute and apply their improved stores of information, and if but few specifics for the diseases of plants resulted, yet we are quite satisfied that the causes of diseases will be more accurately ascertained: and every one is aware that to know the cause of an evil is the most important step towards the prevention of its occurrence.

It is a very important preliminary to the study of the diseases of plants that the nature of these be understood; for our ignorance of, or inattention to, the nature of these organised creatures, is one of the causes from whence arises the little progress made in this branch of natural philosophy.

Its students ought fully to understand that this part of the creation, even the commonest weed, is so highly organised—so exhibiting intimations of the functions, circulations, and secretions more highly developed in the superior animals, that it is not possible to point out where animal life terminates, and where vegetable life begins: the zoophytes connect the two kingdoms. It is absolutely necessary, we think, for this to be understood and felt by those who enter upon the investigation of vegetable diseases, because we have a strong opinion that these, in very many instances, are caused by the plants which they infect being treated as if they were totally insentient matter—scarcely more susceptible of injury at some periods of their growth than the soil from whence they partly derive their sustenance.

To determine the question whether plants possess a degree of sensation is not so easy as the cursory inquirer may believe; and Mr. Tupper is much nearer to truth when observing that it is as difficult to ascertain the nature of vegetable existence as to determine what constitutes the living principle in animals.

Dr. Darwin, by the aid of imaginary beings similar to the Dryads and other minor deities of the heathen mythology, raised plants to a position in the order of Nature superior even to that to which animals are entitled. Other philosophers, adopting a totally antagonistic opinion, estimate vegetables as bodies, only somewhat more organised than crystals; but like these entirely and uncontrolledly subject to chemical and mechanical changes.

Each of the foregoing extreme opinions, we think, similarly erroneous. The gradation from reason to instinct, from instinct to inanimation, might easily be shown to be as gradual as are the transitions of light in our climate from the noontide to the midnight of a summer's day. But we must confine our attention to that section of creation commencing from the close of the animal classes in the zoophyte, and terminating where inorganic matter commences in the crystal, and the details here given must be directed specially to demonstrate how closely it approaches, how indistinctly it is divided from, the former.

Let us first consider the comparative composition of animals and plants as revealed by the researches of the chemist, and it must be somewhat startling even to the most sceptical to find that their constituents are identical. Carbon, hydrogen, oxygen, azote, sulphur, phosphorus, acids, alkalies, earths and metals are the components of both.

Azote was considered as a constituent, marking, by its presence, animal from vegetable matters; but this distinction is now admitted to fail; for although in the former it is usually most abundant, yet later researches show it to be present in all seeds, it is abundant in vegetable gluten, and pervades the whole frame of the Tobacco plant, yet is absent from some animal substances.

If we follow the above-named chemical bodies through their

combinations we shall find that the similarity between animals and plants still obtains, being equally numerous and intricate in each.

Of the acids there are contained in

| Animals. | Vegetables. |
|----------------|----------------|
| 1. Sulphuric, | 1. Sulphuric, |
| 2. Phosphoric, | 2. Phosphoric, |
| 3. Muriatic, | 3. Muriatic, |
| 4. Carbonic, | 4. Carbonic, |
| 5. Benzoic, | 5. Benzoic, |
| 6. Oxalic, | 6. Oxalic, |
| 7. Acetic, | 7. Acetic, |
| 8. Malic, | 8. Malic, |

besides others still more numerous, peculiar to each.

Of the earths and alkalies, lime, magnesia, silica, soda, and potass are found in both classes; and of the metals, iron and manganese are their conjoint constituents. If we follow the two orders of organised creatures through their more compound constituents we shall find the close analogy still continues; for they contain in common sugar, mucus, jelly, colouring matters, gluten,* fibrin, oils, resins, and extractives.—J.

(To be continued.)

LISTS OF SELECTED CHRYSANTHEMUMS.

I HAVE very much pleasure in forwarding your Christmas-box. May it meet your every wish and expectation.

I have made some additions, so that you will please consider I have also included a New-Year's gift.—W. HOLMES, *Frampton Park Nursery, Hackney.*

TWELVE LATE-BLOOMING LARGE VARIETIES.

Orion, white, yellowish base. Perfection, blush white. Chrysippe, rosy purple. Eole, rosy white. King, creamy white. L'Emir, red. Nonpareil, rosy lilac. Plutus, golden yellow. Racine, yellow, gold tipped. Cassy, orange. Madame André, pinky white.

TWELVE BEST VARIETIES FOR POT SPECIMENS, OR FOR DECORATIVE PURPOSES.

Alcabrade, orange. Chevalier Dumage, yellow. Defiance, white. Vesuvius, crimson. Mount Etna, red. Prince Albert, crimson. Plutus, yellow. Pilot, rose. Dr. McLean, rose. Vesta, white. Auguste Mié, red, tipped gold. Annie Salter, yellow.

TWELVE BEST INCURVED VARIETIES.

Novelty, white. Beauty, blush. Cassandra, white, rosy tip. Yellow Formosum, yellow. Nonpareil, rosy lilac. Pio Nono, red, tipped gold. Plutus, yellow. Queen of England, blush. Themis, rosy pink. Vesta, French white. Miss Kate, lilac. Dupont de l'Eure, carmine.

TWELVE BEST POMPONES FOR SPECIMEN PLANTS, AND FOR GENERAL DECORATIVE PURPOSES.

Bob, chestnut brown. Drin Drin, yellow. Andromeda, creamy white. Cedo Nulli, white. Canrobert, yellow. La Vogue, yellow and orange. Helene, purplish-rose. L'Escarboucle, yellow. Sainte Thais, chestnut. Nelly, creamy white. Mrs. Dix, white, purple tip. Duruflet, rosy lilac.

WATERING PEACH AND VINE-BORDERS IN A COLD HOUSE.

IN my vinery, which is not heated, I have an inside border for my Vines; and on the back wall I have a Peach and a Nectarine. What I wish you to tell me is, Should I keep my Peach and Nectarine-border dry during the winter months and not water them at all, and am I doing right by withholding water from my Vine-border inside? The outside border of my Vines I have covered to the depth of a foot or more with the leaves of forest trees that grow in another part of my garden.—A REGULAR SUBSCRIBER.

[The border for the Peach trees should not be dry, neither should it be soaked; but if you allow it to become very dry, it is very likely that the buds will drop in the spring, and thus you will be disappointed. Do not delay a day in giving a little water if the soil is very dry. Under the circumstances it would be best to draw aside some of the surface soil and then water,

* The gluten of plants is the albumen of animals.

and when all is nicely soaked in replace the dry soil on the surface. It will not matter so much with the Vines, as the roots are allowed to get outside; but in their case, too, the soil should be moistened a fortnight before you expect the buds to begin to swell—say in the month of March, and if water at from 80° to 90° is used it will help to set the roots going. The covering the border of such a house inside is a matter of little moment, as the frost must be severe indeed to hurt the roots there. You would see what Mr. Fish said about placing heaps of dung inside houses; but that would hardly be applicable to your case unless for a short time in March and April, and not at all in winter, as, if any heat to speak of were given off, the buds would be excited too early. In your circumstances, without fire heat, the longer you can keep your trees from breaking their buds the better will they do. The trees on the outside of your border will keep the frost out, will nourish the roots, and help to attract and keep them near the surface; otherwise protecting the roots of such late houses is of minor importance, though we think it is always advisable to keep out severe frost when practicable.]

PLANTING POTATOES.

IN THE COTTAGE GARDENER of December 11th, page 149, you state that a market-gardener whom you know never plants Potatoes in the open ground until the first week in April, and then only the very earliest kinds.

Will you inform me whether those varieties will keep for winter use, and, if so, oblige me with a list of them?—GEO. L.

[The early varieties will not keep. The market-gardener sells all his early Potatoes as fast as he can send them to market, and supplies the largest ducal establishments in England and Scotland with the best late Potatoes that can be had in any part of the three kingdoms, by means of the money he receives for his early frames and Walnut-leaved varieties, and one other early sort which we do not know. It is a system, and he would sell all his Potatoes in June if he could get rid of them, and trust to the markets for a supply for the rest of the year. The earlier he can sell them the more money he makes of them, and that money procures the best Potatoes in the market till Potatoes come again without the risk of a bad one out of a bushel or a sack.]

STOVE ORCHIDS.

(Continued from page 144.)

SUMMER TREATMENT.

IN describing the summer treatment of these beautiful plants there will necessarily occur some slight repetitions of operations already alluded to. I allude more particularly to the modes of potting, basketing, and blocking, and also to watering and syringing (for full directions on these important points see former instructions). I consider the summer months in the Orchid-house to be April, May, June, July, and August, and I think it will be most useful if I give the heads of the operations for each month separately.

APRIL.—The days will now be of nearly equal length with the nights. The sun will frequently be powerful during the middle of the day. When that is the case shading should be resorted to. The blinds should be let down by ten o'clock in the forenoon on the eastern side (if the house is a span-roofed one), drawn up at noon, and let down on the western side till three o'clock. Syringe the plants lightly, especially those on blocks, every fine morning. Keep the air of the house moist, and increase the heat from 5° to 10° more than last month, especially during bright sunshine. Finish potting all plants that are growing. Stanhopeas and other species that flower downwards through the soil should not be potted or put in new baskets till the bloom is over, for fear of injuring the flower-stems. To encourage the flowering of such plants let them be steeped in tepid water once or twice during the month.

Some Denrobiums will now be in bloom, remove such into a cooler house to prolong their bloom.

MAY.—Attend to shading as directed for last month. Give an hour's longer shade at each end of the day. Continue to repot all the plants not done last month. This is the month for repotting the plants growing in the cooler house—such, for instance, as Cattleyas, Oncidiums, Lælias, and Epidendrums.

The drooping-flowering varieties as they go out of bloom should be put into fresh baskets and fresh soil. Should it not be thought advisable to repot or rebasket any plants, such should have the pots clean-washed and the top part of the old compost removed without injuring the roots, then put on a surfacing of fresh compost, and give an ample watering.

The quantity of water given to the plants may be increased during this month. The Indian species—such as *Ærides*, *Vandas*, and their allies, should have abundance of water now to encourage growth in both roots and shoots. The temperature during this month should reach the highest point.

Use the syringe freely morning and evening, avoiding the flowers as much as possible. During this month slugs and cockroaches will be numerous; see to their destruction most diligently. Visit the house with a candle or bull's-eye lantern after dark, and kill all those enemies you can find.

Observe the flowers as they open, and remove them either into a cooler house, or to the cooler and most airy part of the house where there is but one devoted to these plants.

JUNE.—South American plants during this month will be growing rapidly, *Catesetums* and *Cyrtopodiums* especially. Such should be regularly watered, increasing the quantity as the shoots advance in size—taking care, however, that no water lodges in the hollows formed by the young leaves. I have used beneficially to *Cyrtopodiums* a weak liquid manure just at the period when they were growing most freely. This enriched water caused the plants to make very strong pseudo-bulbs, which flowered freely the following year. Shade during this month most particularly, for the leaves being young they are more liable to be scorched. Air should be given freely, but let it pass over the warm pipes in entering the house.

Cattleyas and *Lælias* should be grouped together, for they never require so much moisture as the Indian species. All Orchids, however, should be allowed to become dry once in the twenty-four hours. Should any plants have made their full growth towards the end of the month, give them less water to induce a gradual going to rest.

JULY.—When weeds appear let them be plucked up whilst young. If allowed to attain any size the roots when drawn up will bring away portions of the compost. Amongst the peat there will often appear young *Heaths*. These are not ugly and may be left to grow to a certain extent. When they droop the soil is dry; hence they serve as hydrometers, and are, as such, useful to show when the soil requires water. I have thought, also, they take up noxious matters that otherwise would injure the delicate young roots of the Orchids. Continue the same attentions as directed for June. The days will now be long, and often dry and sultry. During such weather the floors, walls, stages, &c., should be kept flooded with water during the day, and the syringe should be used for all growing plants, morning and evening. Let the plants in baskets be dipped in the cistern twice a-week, and watered freely on intervening days. The growths of most kinds will be progressing rapidly, and should be encouraged to the utmost, more especially such species as are found under the names of *Ærides*, *Vanda*, *Saccolabium*, *Angræcum*, *Renanthera*, and *Phalænopsis*.

As recommended for May, all blooming plants should be placed in a cooler and drier atmosphere to keep the flowers longer in perfection. Let the shading continue to receive attention, but use it only when the sun shines, either in this month or any other. Let attention be given to all plants that have fully made their year's growth, give such but little water and very slight syringing, and that only in the morning. Remove such into a cooler and drier house. Let the grower bear constantly in mind that all Orchids with pseudo-bulbs require a decided rest for several months, and let him try to put his Orchids into that state during the dark days of winter. On the contrary, Orchids that have simple ordinary stems with evergreen leaves should be kept just slowly growing all the winter.

AUGUST.—This, like July, is often a warm month. Hence the shading should be continued on bright, sunny days, but it may be removed by four o'clock in the afternoon. Keep up a supply of moisture to plants that are growing, both in the air and at the roots. In this month the beautiful *Cattleya labiata* is in great beauty of bloom. Be careful not to wet these splendid flowers. The texture of the floral leaves is so delicate that every drop of water leaves a disfiguring mark behind it. In this month such species as flower when at rest should be removed into a more temperate place, have plenty of air, and scarcely any

water for two or three months. Then when the flower-buds show prominently remove them into a rather warmer but no moister place. The following are instances of the kinds of Orchids alluded to—*Dendrobium nobile*, *cærulescens*, *Cambridgeanum*, &c. Others that require a warm, dry treatment when in flower require only to be kept drier in this month. Such flower just before they begin to grow—as, for instance, *Dendrobium aggregatum*, *formosum*, and *densiflorum*. They should be kept in a moderately warm but dry part of the house till the flowers begin to open. Most of the terrestrial Orchids will now begin to show symptoms of requiring rest, by their leaves turning yellow and stems dying. Set such at once in a cool, dry house. The genus *Cœlogyne* flowers just when the pseudobulbs are fully formed: hence they should be kept growing till then. The blooming season for some of the best is January and February, though some bloom in summer. Observe their different seasons and treat them accordingly. During these summer months wage a constant warfare with insects, and, if possible, destroy them before they lay their eggs. By doing that the next year's production of these enemies will be greatly reduced.

T. APPLEBY.

(To be continued.)

THE FRUIT CROP OF THIS YEAR.

AGRICULTURAL papers of all kinds teem with reports of the crops of different districts in the past season; meteorologists, also, from time to time exchange notes in a similar way; while our florist friends, with few exceptions, send up a report detailing a series of disappointments, failures, vexations, and losses; public bodies also furnish reports to the general reader how matters go on with them: consequently the term "report" has a wide application, and there is no harm at our calling it into requisition, and inquiring, through the pages of *THE COTTAGE GARDENER*, how the fruit crop has turned out in the various districts in the kingdom. So thus some general conclusion may be come to whether we may term the past season a fruitful one or not; and we may learn, by comparing notes, how much the past has differed from preceding summers in its effects on the growth of trees, ripening of fruit, and the other features which constitute a good fruit season from one of an opposite kind. And though I by no means assume the report I am about to give of the crop of ordinary hardy fruits in this neighbourhood (Mid-Kent), where large quantities are grown is the same as has been obtained elsewhere, still if those living in other fruit-growing districts were to come forward and state their conditions, we might be enabled to judge of the relative value of the grumbling on the one hand, and congratulation on the other, we meet with on the subject: therefore, without further preface, we commence with the most common as well as the most useful of all our hardy fruits—one that will always be a popular favourite.

APPLE.—The crop of this fruit has varied considerably; but, so far as quantity is concerned, there certainly has been a full average, but the quality is in most cases very inferior—worse than I ever remember to have seen, except perhaps in 1841. The trees certainly were in a tolerably good condition for supporting a crop, so far as the well-maturing of last-year's wood was concerned. And this is of much more importance than is generally supposed—in fact, it is to this that I attribute the well-blooming of so many shrubs and trees in the past season; and the strength and perfectness by which the buds of the Apple were formed last autumn materially assisted its setting, in rather adverse weather, in the last spring—and when once a crop of fruit is fairly set there is generally a crop. Cold dull weather following in June, the progress was tardy, and the fruit as well as the trees were checked in their early growth. This check has been in no degree compensated for by the subsequent weather we had all the summer; for, with the exception of the first ten days or so in July, and about the same in the early part of October, the whole season has been wet and ungenial. The result is that many of the Apples were cracked and spotted, and some have been maggot-eaten; but the latter are not more numerous than in the generality of seasons, while the fruit that is perfect is very small, and the table kinds deficient of flavour. Nevertheless, there is no lack of fruit, such as it is; and the crop being ripened late, it has kept tolerably well. I very much doubt if we have much of a crop next year; for, with the exhausting crop of the present summer, and unaided by that genial warm weather which alike perfects wood and fruit, it is much to be feared the little blossom

we have next spring will be deficient of the vigour requisite to produce perfect fruit.

PEAR.—Most of the remarks given on the Apple apply to this fruit, excepting that the early kinds were nearly a total failure, and the whole exceedingly small, cracked, spotted, and deformed. Standard Pears are certainly a worse sample than Apples, and in flavour the deficiency is even more apparent than in the Apple. This is easily to be accounted for:—the climate of this country is, at the best, scarcely bright and sunny enough for the Pear, and especially in such seasons as the past one: consequently, the fruit is exceedingly small, poor in flavour, and much of it cracked, deformed, or imperfect, as stated above. The wall fruit is certainly not so bad as that on the open standard trees, but there is nowhere that flavour we have had in the last few years. The quantity of late kinds has certainly been a full average, but the high winds thinned them much, and the size being small the basket filled very slowly. The Crasanne, Williams' Bon Chrétien, Duchesse d'Angoulême, and the Bergamots have been very indifferent. Marie Louise has been a trifle better, but the flavour of all has fallen short of what it is in a usual way. I may here remark that with us several Pears that bear and ripen their fruit on open standards in ordinary years are much better flavoured than the same kinds grown against a west or north wall; but this year it has been reversed—the wall fruit are the best and largest.

PLUMS.—It is difficult to speak with confidence on these, as they varied so much; but in a general way it may be stated that where the crop of last year was good, that of the present one was a failure; but there has been a tolerable supply of Plums, such as they were, of some of the kinds, but the best ones have been scarce. Damsons have been almost a total failure, and as a whole the Plum crop must be considered under an average. The kinds most grown as open standards are—the Diamond, Mogul, Royal Dauphin, Orleans, and some others having local names. In favourable seasons Green Gages are tolerably good, but there have been few this year. The yellow Plums are not much grown as standards, and the fruit of all kinds had much to endure from the high winds. Individually, the specimens have been better than the Pears, though falling far short of what the same kinds were last year.

CHERRIES.—Very indifferent, especially the early kinds; but all kinds have been bad, the Morellos against walls being perhaps the best, but then short of last year in size and quality. There was plenty of blossom, and, in general, plenty of fruit set; but the cold ungenial weather that followed stunted their growth, and the rain at the time of their ripening cracked them very much, so that there were very few perfect fruit of the May Duke, Black Heart, and Bigarreau sections: consequently, the Cherry crop, if not set down as a failure in quantity, was certainly so in everything else, the Morellos alone on walls, as above stated, being excepted.

FILBERTS.—In some favoured spots these were not amiss, but in general they ripened badly, being much infected with the maggot, and the nut itself when sound seemed deficient of that flavour which characterises it in more favourable seasons. The Cob is perhaps worse than the Filbert, and there have been great complaints of both falling very much during the growing season, so that at harvesting time the quantity really fit for storing away was very small indeed. As a rule, therefore, we may place the Filbert crop as much under the average.

WALNUT.—Although this is hardly to be classed as a cultivated fruit, yet its being generally esteemed and much grown in some districts, it may be stated here that, so far as I can learn, the quality of the crop grown in this neighbourhood is really worse than that of any other kind of fruit I know of. Even as early as the time for picking the green fruit for pickling (in July), they were all spotted, bruised, deformed, or damaged, and, of course, have never reached perfection. It is hardly fair to say the high winds occasioned all this, for trees in sheltered places suffered also. The same ungenial atmosphere which denied its beneficial influence to so many other productions was equally severe on this, and English Walnuts are, I should say, but thinly scattered over the land. Here (Linton), there are none.

CHESTNUTS.—Though still less a cultivated fruit than the Walnut, I only allude to them here to show that they, too, are sufferers from the same universal cause which has shortened our supply of so many things we have had in such abundance in years gone by. Last year several score bushels were gathered here (Linton). This season I do not think we shall have one.

This fruit is at all times very late, and this year the season has been too late for it: consequently, only abortive or half-grown Nuts are the result.

GOOSEBERRIES have been much under an average crop with us, but I believe this has not been the case in all places; but all accounts agree in the fruit being deficient in flavour and very late in ripening. They would have lasted late in the season but for the rain, which made them burst. But I regard the shortness of the Gooseberry crop as the smallest of the evils we have to complain of; for the growth of the tree has been healthy, and we are not unlikely to be favoured with a good crop next year, if all other things be favourable at the proper blossoming time. I cannot say I am so sanguine of many other things, but the Gooseberry tree is certainly more healthy than most other trees, and from that we may anticipate a corresponding good crop next year if all go on well.

CURRENTS.—These were on the whole good, both in quality and quantity. Red ones were, perhaps, smaller than usual, but the Black ones were a full average size, and both tolerably plentiful; and, like the Gooseberry, the season has not been so hurtful to them as to many other things, so that we may hope to be favoured with a crop of these next year.

RASPBERRY.—Of all the hardy fruits none have shown the effects of the late sunless season, in the absence of flavour, more than this. Raspberries everywhere were little else than a mass of tasteless watery juice. The fruit looked pretty well, and there was an average quantity of it; but it was very unlike the same fruit of the last two or three years. Some that ripened during the few dry days we had in the early part of July were not so insipid, but, before and after that time, the watery acidulous taste betokened too well that the season was not a suitable one for it.

STRAWBERRY.—The reports on these are more varied than that of any other fruit; for in some places there were scarcely any, while in others the crop was abundant. In one thing, however, all agree—that the quality was indifferent; not that they were small, but that they had no flavour, and would not bear handling, while the perishing rains destroyed so many. The best variety that I saw in the past season was Trollope's Victoria. It seemed to endure the unusual character of the season better than most others. Many of the lately-introduced kinds were poor, but they ought not to be judged too severely by their shortcomings in such a season as the past one has been.

In drawing this report to a close, I hope some of our north and west-country friends will give us the benefit of their observations on the fruit crops of their localities. Possibly their account may differ much from mine. All districts have not suffered alike from the cold and rain as we have in Kent.—J. ROBSON.

A GENERAL FALLING OF LEAVES.

I HAVE three plant-houses against a south wall, and a fair collection of stove and greenhouse plants. Within the last three weeks nearly all the plants have lost their leaves, especially the Camellias, which have lost every leaf. I feel very anxious about them, for they were such nice plants, and so well set with flower-buds. In many cases some of the plants have lost their little branches as well. If I just rap the stem of some of them down fall all the leaves—in fact, there is not a plant in any of the houses that has not this curious disease. The gardener cannot account for it, unless it be, he says, it has arisen from an escape of gas, a pipe having been laid down a few yards from the back of the wall about a month ago. We have not smelt the gas in any of the houses.—FLOBA B.

[We can form no idea of the cause. It would take a good dose of gas to produce this effect. We know that gas-lights are prejudicial to plants in rooms at all confined; but even in close rooms with plants in them, and some escape of gas, we never knew of such a thoroughly destructive result. We hope the Camellias will break again in a little moist heat. There might be a great escape of gas in one night, but then it is singular that all the houses should be affected, as it is hardly likely that all the houses would have a pipe full of leaks. We should like you or the gardener to give more particulars, and meantime can only sympathise with you both. Has any particular substance been used for fumigating, or washing, or watering? or have the houses been recently painted with any particular paint? Has there been any general want of watering, or as general a sudden variation of heat?]

FLOODED GARDEN.

I AM threatened with an inundation in the lower part of my garden, where young Apple, Plum, and Rose trees are growing, also Hollyhocks, Pampas Grass, with many ordinary perennials together, and two fine beds of Strawberries. The low-growing plants I expect will be covered, possibly a foot deep. Will all these things suffer so much as to perish altogether, if nothing is done to carry off the water sooner than it is likely to drain itself off? It is generally supposed that springs do not exist here, only landsoaks. The water here, however, began to rise after the rains ceased, and has progressed steadily ever since. Does not this look as if the *springs* were the cause? Will my lawn, too, suffer materially from the ducking? The water will not be able to flow so as to undermine.—GRATITUDE.

[We do not think that the inundation will permanently injure anything you mention, unless the plants remain under water for a long time. We know a garden that was flooded with salt water near Ipswich, and remained under water for some days. The Asparagus-beds were improved, and nothing injured. We were told by the proprietor, a man of science and veracity, that the Cherries in the following summer had a very perceptible saline flavour. The facts you mention may be explained by supposing that there are springs, but it is quite certain that the water in your garden comes from some source on a higher level. We advise you by ditches to prevent a recurrence of such inundations, which might be easily done if you have an outfall.]

FUCHSIA MAMMOTH.



THIS extraordinary double Fuchsia was raised by Mr. George Smith, Tollington Nursery, Hornsey Road, Islington, who has for many years been one of the most successful raisers of this class of plants. Our figure will give the best idea of the size and shape of the flower, the tube and sepals of which are crimson, and the corolla violet-purple, with a vermillion stripe half-way down each petal. It is certainly a very fine flower.

TOMATOES NOT RIPENING.

ON all hands we hear of failures of plants from the more temperate or tropical regions. The Chinese Sugar Cane, or *Holcus Saccharatus*, has no where, that I am aware of, yielded the crop it was reported as likely to do, and which it certainly did in some places the year before. Indian Corn has been a like failure, and even Scarlet Runner Beans have not been so prolific as they are sometimes. All these failures are easily enough accounted for, as is also that of the plant mentioned above, which, like the others, claims a warmer climate for its home. In the garden here (Linton) we have had very few ripe fruit, and these far from being so good as usual, although the plants were treated the same as in former years. But the cause is obvious enough—a cold, wet, sunless season is not the one to ripen a tropical fruit, although it is, perhaps, favourable for the growth of a vegetable from a colder region: consequently, the garden Pea has done us more service this season than for several years past. The Tomato ripened very few fruit with us, even against a south wall, while last year some self-sown plants in the open ground produced some good fruit without any other attention than putting a few faggot sticks under them horizontally, to keep them from the ground. Chilies have in like manner failed to ripen in a cold pit as they did last year, and the few Tomatoes that did colour I should think were deficient of that flavour which sun alone can give them.—J. ROBSON.

NEW AND RARE PLANTS.

PHALÆNOPSIS ROSEA (*Rose-coloured Phalænopsis*).

THIS Orchid has been called also *Stauroglottis* and *Phalænopsis equestris*. It is a native of Manilla, whence it was sent to Messrs. Veitch & Sons by their collector, Mr. T. Lobb. Flowers white and pink.—(*Botanical Magazine*, t. 5212.)

AGAVE YUCCÆFOLIA (*Yucca-leaved Agave*).

Native of the Rio del Monte district in Mexico. Flowers in a cool greenhouse during the summer. The flower-stem at Kew was twenty feet high.—(*Ibid.*, t. 5213.)

ONCIDIUM PHYMATOCILUM (*Warted-lipped Oncidium*).

Probably a native of Mexico. Imported in 1847, both by Mr. Clowes and Messrs. Loddiges. Blooms in May. Flowers with white lip, and the rest yellow-green spotted with orange-red.—(*Ibid.*, t. 5214.)

DIANTHUS SEQUIERI var. CAUCASICUS (*Caucasian Sequier's Pink*).

Native of mountain districts of southern Europe, as well as of a great part of Russia and Siberia. Numerous specific names have been applied, but they have all been reduced to synonymes of the above by Sir W. Hooker. Flowers various shades of purple.—(*Ibid.*, t. 5215.)

METHONICA GRANDIFLORA (*Large yellow-flowered African Methonica*).

Native of the Island of Fernando Po, sent home by the Kew plant collector, M. Gustav Mann. Blooms from July to September. Flowers sulphur-coloured, eight inches across.—(*Ibid.* t. 5216.)

PRODUCTION OF MANURE FROM THE AIR.

(By MM. Margueritte and De Sourdeval.)

THE value of guano and most other concentrated manures arises to a considerable extent from the ammonia which they contain. As three-quarters of the atmospheric air consist of nitrogen, and as hydrogen forms one-ninth of all pure water, if some cheap means could be found for inducing the hydrogen of water to enter into combination with the nitrogen of air and form ammonia, this valuable manure could be produced in unlimited quantities, and the agricultural products of the world enormously increased. The efforts to do this have been at last crowned with success, as will be seen by the following abstract of some continental researches.

Since the remarkable labours of Messrs. Liebig, Schaltenmann, and Kuhlmann, on the fertilising action of ammoniacal salts, the production of ammonia at a low price has become a problem of the highest interest. But to arrive at this result it is necessary to obtain the nitrogen elsewhere than in the nitrogenous matters; which may, for the most part, be employed directly as manures,

and of which the limited quantities and elevated price permit only a restricted use.

Atmospheric air is an inexhaustible and costless source of nitrogen. However, this element presents so great an indifference in its chemical reactions, that, notwithstanding the numerous attempts which have been made, chemists have not heretofore succeeded in combining it with hydrogen so as to produce ammonia artificially. This result, so long desired, has been reserved for MM. Margueritte and De Sourdeval, who have obtained it by employing an agent of which the remarkable properties and neat and precise reactions have permitted them to succeed where all others had failed. This agent is baryta, of which notice has recently been taken on account of the recent applications that M. Kuhlmann has made of it in painting, but of which no person suspected the part that it was to be called to play in the development of the agricultural riches of our country. The manufacture of ammonia is based on a fact entirely new—the cyanuration of barium. It had been believed until the present time that potash and soda alone had the property of determining the formation of cyanogen; that the earthy alkaline bases—baryta, for example—could not, in any case, form cyanides.

Messrs. Margueritte and De Sourdeval have ascertained that this opinion is entirely erroneous, and that baryta, much better than potash or soda, fixes the nitrogen of the air or of animal matters in considerable proportions. It is already understood, that for the preparation of Prussian blue the cyanide of barium presents great advantages over that of potassium, for the equivalent of baryta costs only about the one-seventh of that of potash. Thus do we find practically and really obtained the result first announced by Desfosses, and vainly pursued in France and England—the manufacture of cyanides from the nitrogen of the atmospheric air. This solution, so important, depends on the essential difference which exists between the properties of baryta and those of potash; the first is infusible, fixed, porous, and becomes deeply cyanuretted without loss; the second is fusible, volatile, and becomes cyanuretted only at the surface, and suffers by volatilisation a loss which amounts to 50 per cent. After the cyanide of barium was obtained, the grand problem for Messrs. Margueritte and De Sourdeval to resolve was the transformation of the cyanide into ammonia, by means at the same time simple, rapid, and inexpensive. The following is the operation:—

In an earthen retort is calcined, at an elevated and sustained temperature, a mixture of carbonate of baryta, iron filings in the proportion of about 30 per cent., the refuse of coal, tar, and sawdust. This produces a reduction to the state of anhydrous baryta, of the greater part of the carbonate employed. Afterwards is slowly passed a current of air across the porous mass, the oxygen of which is converted into carbonic oxide by its passage over a column of incandescent charcoal, while its nitrogen, in presence of the charcoal and of the barium, transforms itself into cyanogen, and produces considerable quantities of cyanide. In effect, the matter sheltered from the air and cooled, and washed with boiling water, gives with the salts of iron an abundant precipitate of Prussian blue. The mixture thus calcined and cyanuretted is received into a cylinder of either cast or wrought-iron, which serves both as an extinguisher and as an apparatus for the transformation of the cyanuret. Through this cylinder, at a temperature less than 300° (centigrade) is passed a current of steam, which disengages, under the form of ammonia, all the nitrogen contained in the cyanide of barium. It is impossible to foresee all the results of this great discovery. Among other things, it suggests the production of nitric acid from the air by oxidising ammonia.—(*Chemical News*.)

NEW BOOKS.

HEALTHY MORAL HOMES.*—The title page of this excellent little volume does not do it justice. It embodies the author's praiseworthy object—"improving the home of the agricultural labourer;" but its contents extend far beyond that, for they convey almost every information which an amateur needs and seeks for when he has resolved to build himself a house. Job mercilessly exclaims, "Oh! that mine adversary had written a book," for that son of wisdom would have flayed him critically;

* *Healthy Moral Homes for Agricultural Labourers*, showing a good investment for landlords with great advantage to tenants. By C. Vincent Bernard, a practical workman of 40 years' experience. With 24 illustrations. London: COTTAGE GARDENER Office; and C. V. Bernard, 2, Lucas Place, Commercial Road, East.

but we would say, "Let our enemy build a house after his own unaided devices." Smothering in a hod of mortar would many a time be a blessing to such a man. Now, the volume before us prevents the necessity for that bold man to be unaided. It is full of the information which will prevent him falling into building dilemmas, or help him out if he has rushed into them. Let us justify this commendation by a quotation.

23½ cubic feet of sand, 17½ do. of clay, 13 do. of chalk, equal 1 ton.
A cubic yard of earth before digging, will occupy 1¼ cubic yards when dug.
27 cubic feet, or 1 cubic yard, contains 21 striked bushels, which is considered a single load, and double these quantities a double load.

| | Ins. | Ins. | Ins. | lbs. | ozs. |
|------------------------------|----------|----------|-----------|--------|------|
| A stock or plain brick..... | 8¾ long, | 4½ wide, | 2½ thick, | weighs | 5 0 |
| Well-made country do. | 9 " | 4½ " | 3 " | " | 6 0 |
| Paving brick | 9 " | 4½ " | 1½ " | " | 4 0 |
| Dutch clinker | 6¾ " | 3 " | 1½ " | " | 1 8 |
| Pantile | 13½ " | 9½ " | " " | " | 5 4 |
| Bridgewater do. | 14 " | 14 " | " " | " | 6 0 |
| Plain tile..... | 10½ " | 6½ " | " " | " | 2 5 |
| Foot-paving tile | 12 " | 12 " | 1½ " | " | 13 0 |
| Ten-inch do. | 10 " | 10 " | 1 " | " | 8 9 |
| Pantile laths, 10 ft. bundle | 120 feet | 1½ " | 1 " | " | 4 6 |
| " " " " " " | 144 " | 1½ " | 1 " | " | 5 0 |
| Plain laths for tiling | 500 " | 1 " | ½ " | " | 3 0 |

Thirty bundles of laths one load.
272 feet superficial is a rod of brickwork, 1½ brick brick, or 13½ inches thick, called in London the standard thickness, to which all brickwork of whatever thickness is reduced.

306 cubic feet or 11½ cubic yards, equal to 1 rod of reduced brickwork.
4300 stock bricks to 1 rod reduced, 4 courses 11 inches high.
4500 " " if the 4 courses measure 11½ high.
4900 " " laid dry in wells or cesspools to a rod.
A rod of brickwork contains 235 feet cube of bricks, and 71 feet of mortar (4 courses to a foot) : which will weigh, upon an average calculation, 15 tons.
A rod of brickwork requires 1½ cubic yards of chalk lime, and 3 single loads or yards of drift; or 1 cubic yard of stone lime, and 3½ single loads or yards of sand; or 36 bushels of cement, and 36 bushels of sharp sand.
16 bricks to a foot of reduced brickwork.
7 " to a foot super. of facing.
10 " to a foot super. of gauged arches.
30 " on edge and 45 bricks flat to 1 yard super, brick nogging.
36 stocks laid flat and 52 stocks on edge to 1 yard of paving.
36 paving bricks laid flat and 82 do. on edge to 1 yard of paving.
9 foot tiles, or 13 ten-inch do., to 1 yard of paving.
140 Dutch clinkers on edge to 1 yard of paving.
A load of mortar, 27 feet cube, requires 9 bushels of lime and 1 yard of sand.

Lime and sand loses one-third of its bulk when made into mortar.
Plain tiles will require to a square, if each tile shows on the face 4 inches, 600; 3½ inches, 700; 3 inches, 800. 1 bundle of laths and nails, 1 peck of tile pins, and 3 hods of mortar; or 210 tiles to a square of flat roofing.
Pantiles will require for a square, 180 to a 10-inch guage; 154 to an 11-inch; and 130 to a 12-inch guage; 1 bundle of laths and 1½ lb. of 6d. nails.
Bridgewater pantiles, 100 to a square.
A hod contains 20 bricks.
Lime, or cement and sand, to make mortar, requires as much water as is equal to one-third of their bulk, or about 5½ barrels for a rod of brickwork built with mortar.
1 bushel of cement will cover 1½ square yards 1 inch thick; 1½ yards ¾-inch thick; 2½ yards ½-inch thick.
1 bushel of cement and 1 bushel of sand will cover 2½ square yards 1 inch thick; 3 yards ¾-inch thick; 4½ yards ½-inch thick.
1 bushel of cement and 2 bushels of sand will cover 3½ square yards 1 inch thick; 4½ yards ¾-inch thick; 6½ yards ½-inch thick.
1 bushel of cement and 3 bushels of sand will cover 4½ square yards 1 inch thick; 6 yards ¾-inch thick; 9 yards ½-inch thick.
1 cubic yard of chalk lime, 2 yards of road drift or sand, and 3 bushels of hair, will cover 75 yards of render and set on brick, and 70 yards on lath; or 65 yards of plaster or render 2 coats and set on brick, and 60 yards on lath; floated work will require about the same as 2 coats and set.
1 bundle of laths and 500 nails will cover about 4½ yards.
Slates called doubles, are 13 in. by 6 in., 1000 will cover 2 squares, weighs 1 ton.
" " ladies, 16 " 8 " " 4½ " 1½ " "
" " countesses, 20 " 10 " " 7 " 2 " "
1 ton of 6-inch and 7-inch granite paving will cover 4 yards super.
1 ton of 9-inch do., 2½ yards; 1 ton of pebble paving, 4½ yards.
70 feet super. 2½-inch York paving, weight 1 ton; 58 feet of 3-inch do., 1 ton; 54 feet of 3-inch granite, 1 ton.

We must not have our readers suppose, however, that Mr. Bernard does not pay especial attention to the construction of unexceptionable cottages for the labouring classes—almost every page contains something regardful of that object. It is the main theme of the book; and it is scarcely possible to imagine a fitting labourer's cottage that a plan with full directions and estimates for its construction could not be found in its pages. It is impossible for us to transfer them to our columns, but we will find space for one quotation from the more general directions.
"A sink should be placed in the scullery, through which slops of every description can pass through a trapped stoneware or iron sink (stoneware, as the most cleanly, preferred), to a trapped stoneware drain to the manure-tank (a most indispensable requisite to the cultivation of a garden). Nothing will contribute so much to cleanliness in the house and at the door as for the wife to find that it is less trouble to deposit the slops in the sink than to carry them to the door.

"The manure-tank to be placed at least 30 feet at the rear of the house, to contain about 200 gallons—say about 4 feet by 2 feet and 4 feet deep. Form in the tank a well 12 inches deep and 16 inches square, with a man-hole level with the surface of the ground to dip out the liquid as may be required. Over the tank form the ash-bin. Acting as the back-wall to the *necessaire*, the excreta will fall into the tank by a four-inch drain-pipe, to finish within four inches of the bottom of the well; thus preventing the escape of the gas into the *necessaire*. Adjoining the *necessaire* could be placed the pigsty, with a drain to well in tank. A man's stoneware watering-sink should always be provided, to drain also into the tank. The tank will thus receive from these four sources of supply such a fertilising material, if properly mixed as to quality and applied with judgment, as would quadruple the produce from the garden.

"A wattle-screen, for the sake of decency, should be placed four feet from front of pigsty, &c., about six feet in height, against which could be planted evergreen Ivy.

"Surface and rain-water drainage on no account to be connected with the manure-tank."

We strongly recommend the volume to every one who is purposing to build a house, whether it be for the upper or lower "ten-thousands."

TO CORRESPONDENTS.

DAISIED LAWN—PEARS CRACKING (*An Old Pembrokeshire Subscriber*).—You will see at page 164 of our last Number that we know of no conqueror of the Daisy but the spud. If your *Beurré Rance* is grafted on a Quince stock, and grows on a dry soil, the fruit will be liable to crack whilst growing.

EDGING TILES (*D. H.*).—Apply for patterns to Messrs. Eastwood, Belvidere Road, Lambeth, S. Write about a drake to some one or more of those who exhibited at Birmingham or elsewhere.

VINES (*J. B-d*).—You had better buy another Black Hamburgh, rather than wait for grafting or inarching on the Frontignan.

MAKING A VINE-BORDER (*W. S. W.*).—If the border is inside the house, perhaps it would be as well to make it at once to avoid trouble afterwards, though we think the Vines do better when the border is made at different times, as they have fresh soil so often to run into. If the border is outside, we would make it at three or four times, if twelve feet wide, beginning with five feet or so, and adding eighteen inches or so every year after the second. The border will be as well if mostly above the ground level. Secure good drainage, open rubble for nine inches over the bottom of the border, then the roughest of the compost. Mix your loam with about one-third of lime rubbish, and, if you like, one-twelfth of leaf mould, and, if you can get them, a good spadeful of broken bones for every two barrow-loads of compost. Make your border from twenty to twenty-four inches deep. It will get shallower by compression and time; that will enable you to apply the top dressings after the border is fully made. The sort of Vines would depend on whether you forced or not. For a forced house we would recommend Dutch Sweetwater, Royal Muscadine, Golden Hamburgh, Muscat of Alexandria, and West's St. Peter's. For a late house not to be forced, we would substitute a West's St. Peter's for the Muscat, or another Muscadine. In either case the Sweetwater will enable you to have Grapes nearly a month before the others.

TRAINING WIRE (*I. G.*).—We have bought it of many ironmongers, and any one of them could obtain it for you if he chose to do so. It is a compound of zinc and other metals made of various sizes, and is more easily twisted than lead.

PROPAGATING CASE TOO HOT FROM SUNSHINE (*J. Brown*).—*Kniphovia uvaria* and *Tritoma uvaria* are synonyms. We presume your glass slopes to the sun. In such a case turning it round so that the slope faces the room will be advisable, and will be preferable to much shading. In very hot days, and the sun bright, even that would be insufficient. Of course, if glass all round, the part next the sun must also be shaded. The more light cuttings will stand the better will they strike, but a little too much kills them: therefore the necessity of watchfulness. See "Window Gardening for the Many" for the reasons and directions.

PINE APPLE CULTURE—FORCED FLOWERS IN MAY (*M. G.*).—There are some good articles on the Pine Apple in our former volumes, and the mass of information of the kind you want will, perhaps, be repeated ere long. Mills' and Hamilton's books on the subject are both good in their way. You can have forced flowers in May of Mignonette, Musk, Wallflowers, Camellias, Epacris, Heaths, Cinerarias, Calceolarias, Cytisuses, Coronillas, Hyacinths, Tulips, Jonquils, &c., without any forcing; and with less or more forcing, Lily of the Valley, Deutzia (of kinds), Roses, Lilacs, Jasmines, Callas, Azaleas, Rhododendrons, Pelargoniums, &c. We do not know if you have a plant-stove.

CLIMBERS FOR A CONSERVATORY (*A. B.*).—*Mandevilla suaveolens*, *Ipomæa Learii*, *Lophospermum Hendersonii*, *Passiflora racemosa*, *P. cœrulea*, *Lapageria rosea*, *Cobæa scandens*, *Rhynchospermum jasminoides*, *Sollya heterophylla*, *Dolichos lignosus*, *Rhodochiton volubile*, *Jasminum revolutum*, *Tecomas*. All the above plants, which you name, will do very well and grow strong; but *Ipomæa Learii*, *Lapageria rosea* and *Rhynchospermum jasminoides*, *Tecomas* and *Mandevilla*, would be better in eighteen or twenty-four-inch boxes inside the house. If that cannot well be managed, the roots should be covered over with eighteen inches of dry litter by the middle of October, and a tarpaulin or a board covering placed over them. A border eighteen inches deep, well drained, and from three to four feet wide, will do for such climbers. The stems must be protected; and the border, as a whole, be covered and kept dryish from October to the end of April.

HEATING A SMALL GREENHOUSE (Overdessel).—We fear you will not heat your greenhouse satisfactorily by any of the modes you propose, and all from the simple fact that your hearth—by which we presume the bars of the grating of your fireplace—is only six inches below the level of the pathway in your house. Now any boiler you could fix, even a small retort of Thompson's, to act well would be at least a foot above your pathway; and so near home the heat would not descend well to pass underneath the pathway, because the whole of the boiler would be much above the level of the pipes as they passed underneath that pathway. With air-pipes at the depressions rising higher than the boiler, and at a considerable waste of labour and fuel, circulation might be made possible; but such attempts are very unadvisable. The great rule to be attended to is, never to have a pipe anywhere lower than the boiler. There are only two ways by which you can neutralise this evil—either manage to sink your grating or hearth from twelve to eighteen inches, or raise your path as much higher as will enable the pipes or flue to pass under the pathway without sinking, and then raise them as high afterwards as you think proper. Without any of that trouble you might have your heating material, either pipes or flue, on the border between the back wall and the pathway, and need no crossing of path whatever, and yet have enough rise from your present furnace; but, as explained the other week, the heat that reached the front of the house would be by radiation and not by conduction, and therefore the front would always be the coldest. There is just one mode by which you can do it without interfering with furnace or pathway. You seem only to have one doorway and one pathway, a dead wall bounding the other end of the house. Though it will require more pipes, it will answer your purpose better. Bring in your flow-pipe from the furnace as proposed; only it will be better if that pipe is fifteen inches above your path, and the return-pipe little lower than the top of the boiler. Take these pipes two or three inches along to the narrow end round by the wall there along the front, and when you come to the wide part increase the size of the pipes if you like, though three inches would do. Pass along that front and round the end to the doorway, and there have a small cistern for feeding and allowing expansion, and have your return-pipe all the way back again. You will need as much piping as that to keep up your house to 50° in severe weather in winter. Somewhere about eighty feet of piping will be wanted to effect this. Even then we would sink a foot at the furnace if we could. The pipes may be on a level if you like: that will not interfere with the circulation, provided the flow comes from the top and the return enters at the bottom of the boiler. If you have a cistern for supply near the boiler, a bend at the farther end will be all that is sufficient, but there should be an open air-pipe placed in it.

TRITOMA UVARIA FOR CENTRE OF A BED (Kentish Town).—Half a dozen good plants of *Tritoma uvaria* would make a good centre to a flower-bed not less than eight feet across, also among *Rhododendrons* in a bed, and best of all in the very centre of a large collection of best *Gladioluses*. *Calystegia pubescens simplex* was too cheap to be of much use in trade; it was sent into the world by the Messrs. Henderson, of the Wellington Road Nursery, about five or six years back. In the hot summer of 1859 we have seen it in the shrubbery of the Wanstead Infant Orphan Asylum covering large plants of *Aucuba* and in bloom, much in the way we see plants flowered for a show. We had not seen anything in that way so gay and at the same time so simple and natural.

RIGHT OF LANDLORD AND TENANT AS TO GREENHOUSES (Another Subscriber and R. S. J.).—The decisions upon this point will be found in *Penton v. Robart*, 2 East. 90, and *Buckland v. Butterfield*, 2 Brod. & Bing. 54. In the case of clergymen, see *Martin v. Roe*, "Law Times," 28. p. 283. Various other authorities are quoted in all those cases.

CYANOPHYLLUM MAGNIFICUM (F. Whitfield).—It is a melastomaceous plant, of the tribe *Miconiæ*. The genus was established by Naudin. The leaves of this species are a foot long, about six inches wide, and beautifully stained with purple on the under surface. It is a native of New Grenada.

CYCLAMENS AS EDGINGS (—).—*Cyclamens* are not at all fit to put as edgings round *Rhododendron*-beds in the west of Scotland.

AZALEA AMENA (—).—It is a low thickset bush, perhaps a little stronger than *Rhododendron hirsutum*. It is perfectly hardy on Bagshot Heath, and we believe also on Culloden Moor, but we have no experience of it ourselves north of London.

CUTTING DOWN THORN-HEDGES (—).—The end of September is the best time in the year to cut down old or young Thorn-hedges; but there is little hurt if they are not cut to the end of February, and no danger whatever if one were obliged to cut one down after it was in full leaf at the middle of May. We have cut in Thorns every month in the year, and almost every season, during forty years.

THRIPS, SCALE, AND MEALY BUG (A Lady Gardener).—If you are obliged, as you say, to be "always with brush or sponge in hand" warring against these vermin, we are very sorry to have to reply that such necessity is evidence of very defective gardening. No application of Gishurst or any other compound "at any particular season" will protect your plants from those insects during the rest of the year. We advise you to give your greenhouse a thorough cleaning, and limewashing with flowers of sulphur in the wash; to thoroughly dress all your plants with Gishurst Compound; and then to keep away the vermin by a better attention to ventilation, keeping the air of the house constantly moist, attentive watering, and frequent syringing.

NAMES OF FRUIT (R. S. J.).—The Bull's Golden Reinette is quite true, and is an excellent Apple. It is quite different from Blenheim. No. 2 is not Blenheim Pippin, and appears very like Flower of Kent, which in all probability it is. (R. Sells).—We cannot make out what your Apple is.

NAMES OF FERNS (H—g).—1, *Asplenium flabellifolium*; 2, *Woodwardia radicans*; 3, *Woodwardia (Doodia) media*; 4, *Asplenium bulbiferum*; 5, *Cyrtomium falcatum*; 6, *Platyloma rotundifolia*; 7, 10, *Nephrodium molle*; 8, *Adiantum pubescens*; 9, *Pteris hastata var. macrophylla*.

NAMES OF PLANTS (A Young Gardener).—Nos. 1 and 2 are forms of *Selaginella Martensii*, the former being that sometimes called *Hugelii* and *Danielsium*. No. 3, *Selaginella denticulata*. The spotted leaf is the *Farfugium grande*. (A Subscriber, Brasted).—The sprig may belong to some *Lonicera*, but we cannot tell which without flowers. The leaf is probably that of some *Spiræa*, and is not unlike that of *S. Nobleana*.

POULTRY AND BEE-KEEPER'S CHRONICLE.

POULTRY SHOWS.

DECEMBER 27th, 28th and 29th. KENDAL. Hon. Secs., G. C. Whitwell and T. Wilson. Entries close December 12th.

JANUARY 2nd and 3rd. CORK. Sec., J. Dowling, Janeville, Sunday's Well. Entries close December 15th.

JANUARY 16th and 17th. POULTON-LE-FYLDE. Hon. Sec., Mr. J. S. Butler. Entries close January 1st.

JANUARY 25th and 26th. CUMBERLAND AND WESTMORLAND. Secs., Mr. M. W. Hastwell and Mr. W. T. Armstrong. Entries close January 12.

JANUARY 30th and 31st. ULVERSTON. Secs., Mr. T. Robinson and Mr. J. Kitchen. Entries close January 10th.

FEBRUARY 6th and 7th. LIVERPOOL. (Poultry and Pigeons). Sec., Mr. A. Edmondson, 4, Dale Street. Entries close January 19.

JUNE 4th, 5th, 6th, and 7th. BATH AND WEST OF ENGLAND.

N.B.—Secretaries will oblige us by sending early copies of their lists.

BIRMINGHAM POULTRY EXHIBITION.

It is universally admitted that Birmingham stands far a-head in all that pertains to Poultry Exhibitions—that the number of visitors attending it quite outstrips all meetings of like character—and though last, by no means the least important item connected with it, is the amount of sales effected during its continuance of poultry thus exhibited, and which is, most probably, quite equal to the total of every other Poultry Show in the kingdom put together. With features so important and distinguishing, it is hardly to be wondered at that amateurs and breeders look with the greatest interest and anxiety to every succeeding meeting of this Society, the rules of which, compiled with the most reflective care—by parties, too, who for many years have made the management a continual study—form as it were a complete guide to Committees elsewhere in the management of local Exhibitions. No doubt can exist, that in thus becoming copyists Committees exercise a far more prudent course, so far as relates to their own success, than by adopting the crude suggestions of those who being suddenly formed into a Committee but too frequently are in the sequel themselves convinced that the well-tried road is the successful one, and that enthusiasm alone is comparatively valueless if not tempered with discretion, most particularly in the carrying out the necessary provisions of such meetings. Memory suggests how readily a very considerable number of societies have been completely upset by endeavouring to enforce novel rules and regulations, which the projectors vainly hoped would prove altogether satisfactory, but which when practically tested caused a second, and in some instances even a first attempt, to be a final one. The errors thus committed were discredited until the time was unfortunately passed to prevent the destructive consequences that ensued. This, then, leads us to recommend young societies to be especially careful how they commence their first Shows, as a mistake at the onset is rarely amended so as to be absolutely obliterated from the minds of either competitors or visitors.

Let us see what the Birmingham Council have effected, for this undertaking originally was most truly a gigantic one, the difficulties to be surmounted of no ordinary character, and none at that time could, from experience, dictate a single suggestion that would be assuredly faultless and effective. With fixed determination to enforce the printed regulations of their Society, which were available to all comers, in every instance these gentlemen have staunchly abided by the strict letter of them; and, although in past years (as occasionally now), suggestions have been thrown out by those who had not the opportunity of estimating all the bearings such changes would entail, the Birmingham Council have stood truly to their position, and the congratulations of every well-wisher must be now evoked to find the Society relieved of the heavy debt that curtailed its usefulness in past years, and that, this pressure being removed, increased efforts will not be wanting to add still greater claims to universal popularity for the future. The Show just closed was held, as is well-known, under circumstances, so far as weather applied, the most unfavourable, being one continuous rain from the commencement to the close. This, no doubt, exercised a very injurious influence on the receipts (most probably, to the extent of some hundreds of pounds), yet the statistics will prove that, in spite of every drawback, with increased growth the Birmingham Exhibition yearly becomes a more general favourite, and tends more and more to

the improvement of every description of poultry, especially those of general utility.

We have made these remarks because we know that a very considerable number of new Poultry Shows are in contemplation in various parts of the kingdom, where, heretofore, they have been unknown; and we are frequently consulted by letter as to our estimate of fresh rules for the management of such institutions, which though on the face of them, in some instances, apparently calculated to do good, if practically carried out would not tend to that result. We will merely add, that the most perfect rules extant are those of Birmingham, and parties who desire to have their own local Show cannot adopt a better code than the tried one.

We are very glad to find recorded in the *Midland Counties Herald*, that the attendance and receipts were larger than either in the last or the preceding year:—

RECEIPTS.

| | 1857. | 1858. | 1859. | 1860. |
|-----------------|----------|-----------|----------|----------|
| | £ s. d. | £ s. d. | £ s. d. | £ s. d. |
| Monday | 119 10 0 | 59 16 0 | 128 5 0 | 184 10 0 |
| Tuesday | 312 8 0 | 240 17 0 | 337 2 0 | 330 18 0 |
| Wednesday | 366 17 0 | 319 4 0 | 300 6 0 | 328 7 0 |
| Thursday | 436 10 0 | 414 14 0 | 362 12 0 | 337 10 0 |
| Total | 1235 5 0 | 1034 10 0 | 1128 5 0 | 1181 5 0 |

ADMISSIONS.

| | 1857. | 1858. | 1859. | 1860. |
|---------------------------|--------|--------|--------|--------|
| First day..... | 4002 | 3673 | 4293 | 4259 |
| Subscribers' Tickets..... | 478 | 239 | 553 | 767 |
| Paid | 895 | 756 | 939 | 832 |
| Second day... .. | 6306 | 4868 | 6744 | 6618 |
| Subscribers' Tickets..... | 793 | 390 | 751 | 877 |
| Paid | 7390 | 6645 | 6102 | 6567 |
| Third day | 2366 | 1234 | 1176 | 708 |
| Subscribers' Tickets..... | 8800 | 8473 | 7394 | 6750 |
| Paid | 14,511 | 15,500 | 18,605 | 20,000 |
| Working classes | 45,541 | 41,778 | 45,952 | 47,378 |
| Total | | | | |

The whole of the tickets which the Council determined upon issuing in quantities at a reduced price, for the special accommodation of the working classes, were disposed of by Monday evening, and from 7000 to 8000 more were applied for; but the executive body were of opinion that they could not exceed the number above mentioned without inconvenience to their subscribers and the public. During the last four years the funds of the Society have been swelled by no less a sum than £1700 8s. received from this source alone.

During the four days that the doors of Bingley Hall remained open, a considerable proportion of the breeding pigs were disposed of by the exhibitors on remunerative terms, the Berkshires selling at from five to ten guineas each, and some of the most admired among the small pigs realising the same sums. As the class for "other large breeds" contained but very few entries, the transactions in them were limited, we believe, to the first prize pen, which obtained equally high figures. The fat Pigs were in request at from 11s. to 11s. 6d. per score. The whole of these, as well as the sheep and cattle on offer, experienced a brisk demand, beef fetching from 7½d. to 9d. per lb.; Southdown mutton, 8½d. per lb.; Shropshires and cross-bred, 8d. per lb.; and Leicester and Cotswold, 7½d.

The following sales of poultry were effected:—Monday, £569 10s.; Tuesday, £103 16s.; Wednesday, £73 3s. 6d.; Thursday, £85 6d.; making a total of £831 10s. against £856 in 1859. The number of pens of all kinds of which a transfer took place, was 197, and the average sum paid for them was, consequently rather more than £4 each. Four pens, to which silver cups were awarded, sold for £59 13s.; twelve first-prize pens for £67; twenty-three second-prize pens for £123 11s.; five third-prize pens for £23 17s.; three fourth-prize pens for £35; fifty highly-commended pens for £219 7s.; twenty commended pens for £74; and eighty pens unnoticed by the Judges, for £243 6d. In some instances, exhibitors bought in their own birds at the prices specified in the catalogue, as a precaution against the possibility of their being claimed.

ESSEX POULTRY ASSOCIATION.—We are informed on good authority that a Poultry, Pigeon, and Rabbit Show on a grand scale, is likely to take place under the auspices of this Society in the autumn of 1861. From our knowledge of the admirable way in which the former Shows of this Association were conducted, we may reasonably anticipate that on the forthcoming occasion it will not lose prestige.

ENTRANCE-FEES FOR BANTAMS.

I NOTICE, in several prospectuses of Shows to be held and already past, that the entrance-fee for each pen of poultry is uniform; although in a case of the fee being 5s., Spanish, Dorking, Game, &c., have in each class £3 10s. as prizes, Bantams must be content with £1 10s. If the class is deemed insignificant, let the entrance-fee be equally so; but in any case is it fair to make our little Game friends pay for their larger brothers and sisters?—SMALLFREY, *Liverpool*.

[Committees ought to regulate the entrance-fees and prizes for each class by the average number of entries in it. If Bantams are as numerous exhibited as the larger breeds, and the prizes given are only half in amount for Bantams as for those larger breeds, then the entrance-fees should be equally reduced. This is rendered the more reasonable by the pens for Bantams being much smaller than for the larger breeds, and consequently occupying less space in the Exhibition-room.—EDS. C. G.]

LORD TREDEGAR'S POULTRY SHOW.

THIS Show was held December 18th. The following prizes were awarded:—

SPANISH.—First, J. Martin, Mildenhall Mill, Claines, Worcester. Second, H. Lane, Milk Street, Bristol. *Chickens.*—First, J. R. Rodbard, Aldwick Court, Wrington, near Bristol. Second, H. Lane. Highly commended, W. R. Elliott, Windsor Villas, Plymouth; C. Atkins, Sewer Cottage, Thames Bank, Pimlico; J. Martin. Commended, E. Payne, Wharf, Cardiff; J. H. Craigie, Woodlands, Chigwell, Essex; C. H. Oliver, Commercial Street, Newport.

SPANISH COCK.—Prize, J. Martin, Worcester. Highly commended, J. Carr, Hafod, Swansea; R. Everett, Gibraltar Cottage, Monmouth.

DORKING (Coloured).—First, F. T. Parker, Rockfield, Monmouth. Second, J. Buckley, Penryfae House, Llanelly, Caermarthen. Highly commended, F. T. Parker; C. H. Wakefield, Malvern Wells, Worcester. Commended, J. H. Thomas, Bewell House, Hereford; J. Logan, Maindee, near Newport. *Chickens.*—First, W. Bromley, Acocks Green, near Birmingham. Second, Miss J. Milward, Newton St. Loe, near Bath. Highly commended, F. T. Parker; J. Buckley; W. Bromley. Commended, R. H. Nicholas, Yewberry Cottage, Malpas, near Newport.

DORKING (White).—Second, R. H. Nicholas, Newport. (First withheld, there being no competition.)

DORKING COCK.—Prize, F. T. Parker, Monmouth. Highly commended, J. Buckley, Llanelly; Mrs. Pettat, Ashe Rectory, Overton, Hampshire; C. H. Wakefield, Worcester. Commended, F. T. Parker.

GAME (any variety except White or Piles).—First, J. Martin, Worcester. Second, J. Martin, High Street, Cardiff. Highly commended, J. B. Chune, Lincoln Hill House, Coalbrookdale, Salop. *Chickens.*—First, J. Martin, Worcester. Second, W. Crawshaw, Pontypridd, Glamorganshire. Highly commended, E. G. Jarvis, Itton, near Chepstow; W. Crawshaw. Commended, J. Llewellyn, Caerphilly, Glamorgan.

GAME (White or Piles).—First, J. Morgan, Caerleon Common, near Newport. Second, R. Trew, Inkerman Street, Newport. Commended, R. Trew.

GAME COCK.—Prize, J. Martin, Worcester. Highly commended, J. Martin, High Street, Cardiff; Mrs. Cartwright, Stow Hill, Newport; J. B. Chune, Lincoln Hill House, Coalbrookdale, Salop.

COCHIN-CHINA.—First, H. Tomlinson, Balsall Heath Road, Birmingham. Second, Mrs. E. Everett, Gibraltar Cottage, near Monmouth. Commended, R. H. Nicholas, Newport. *Chickens.*—First, J. Carr, Hafod, Swansea. Second, R. H. Nicholas. Highly commended, Mrs. E. Everett. Commended, Mrs. E. Everett.

MALAYS (of any age).—First, C. Ballance, Mount Terrace, Taunton. Second, J. B. Fox, Devizes, Wiltshire. Highly commended, C. Ballance.

HAMBURGH (Golden-pencilled).—Prize, E. Payne, Wharf, Cardiff. Highly commended, W. Cannan, Bradford, Yorkshire. Commended, J. Martin, Worcester. *Chickens.*—Prize, J. Martin, Worcester. Highly commended, Miss L. Crawshaw, Caversham Park, Reading. Commended, E. Payne, Wharf, Cardiff; H. Boycott, the Firs, Ironbridge, Salop.

HAMBURGH (Silver-pencilled).—Prize, J. Martin, Mildenhall Mill, Claines, Worcester. Highly commended, W. Cannan, Bradford, Yorkshire. *Chickens.*—Prize, J. Martin. Highly commended, J. Llewellyn, Plymouth Arms, St. Fagans. Commended, J. B. Chune, Lincoln Hill House, Coalbrookdale, Salop.

HAMBURGH (Golden-spangled).—Prize, W. Cannan. Highly Commended, W. Cuff, St. Fagans, near Cardiff; J. B. Chune. *Chickens.*—Prize, W. Cannan. Highly Commended, W. Cuff.

HAMBURGH (Silver-spangled).—Prize, W. Cannan. Highly Commended, G. Hoskins, Tunnel Terrace, Newport. *Chickens.*—Prize, G. Hoskins. Highly Commended, J. B. Chune; G. Hoskins; J. Johnston, Henllis, near Newport; W. Cannan.

POLANDS (Black with White Crests).—Prize, T. P. Edwards, Lyndhurst, Hants. *Chickens.*—T. P. Edwards.

POLANDS (Gold and Silver).—Prize, Mrs. Pettat, Ashe Rectory, Overton, Hampshire. Highly commended, W. Cannan; W. Williams, Bryn Mill Lodge, Singleton, near Swansea. *Chickens.*—Prize, Mrs. Pettat. Highly commended, J. Carr, Hafod, Swansea. Commended, J. Logan, Maindee, near Newport.

BANTAMS (Game).—First, R. L. Liscomb, Burleigh, near Plymouth

Second, J. B. Chune. Third, Mrs. Pettat. Highly commended, J. H. Craigie, Woodlands, Chigwell, Essex. Commended, Mrs. E. Everett, Gibraltar Cottage, Monmouth; E. Payne, Wharf, Cardiff; J. B. Chune.

BANTAMS (any other variety).—First, J. Martin. Second, R. Everett, Gibraltar Cottage, Monmouth. Third, Mrs. B. Blay, the Poplars, Gregory's Bank, Worcester.

ANY OTHER DISTINCT BREED.—First, T. R. Williams, Newport (Black Hamburgs). Second, W. Cannan (White Polands). Third, J. Hinton, Hinton, near Bath (Brahma Pootra). Fourth, J. B. Chune. Highly commended, R. H. Nicholas, Yewberry Cottage, Malpas, near Newport (Black Hamburgs); Mrs. B. Blay (Andalusians); H. Leaworthy, St. John's Cottage, Newport, Barnstaple (Sultans); Miss L. Crawshaw, Caversham Park, Reading (Pheasant Malays). Commended, W. Cannan (Black Hamburgs); J. Hinton (Brahma Pootra); Miss G. Everett, Gibraltar Cottage, Monmouth (Silk Fowls).

GUINEA FOWLS.—Prize, R. Everett, Gibraltar Cottage, Monmouth.

DUCKS (Aylesbury).—First and Second, J. Logan, Maindee House, near Newport. Highly commended, J. B. Harding, High Street, Cardiff. Commended, J. Buckley, Llanelly, Caermarthenshire.

DUCKS (Rouen).—First, A. Higgins, the Grange, near Chepstow. Second, Miss L. Crawshaw, Caversham Park, Reading. Highly commended, A. Higgins; Hon. G. Howard, Charlton, Malmesbury, Wilts. Commended, A. Cuthbertson, Cefnleece, Langibby, near Newport.

GESE.—First, Miss L. Crawshaw. Second, Hon. G. Howard. Highly commended, A. Cuthbertson; J. Buckley, Penyfae House, Llanelly; A. Higgins. Commended, L. Williams, Spitty Farm, Christchurch.

TURKEYS.—First, Miss L. Crawshaw. Second, Miss J. Milward, Newton St. Loe, near Bath. Highly commended, W. B. Hawkins, Pontymoile House, Pontypool; W. Crawshaw, Pontypridd, Glamorgan. Commended, Mrs. E. Everett; F. Crang, Timsbury, near Bath; C. Lyne, Brynhyfryd, Newport.

Judge for the Poultry, Edward Hewitt, Esq., Eden Cottage, Sparkbrook, near Birmingham.

ADVENTURES OF A YOUNG SPANISH COCK.

NO. I.—MY FIRST VISIT TO BIRMINGHAM.

I WAS hatched on the sixth day of March in this year of Poultry Shows, 1860. I was taken from a basket of eggs that my owner was selling at two guineas a-dozen, and both my father and mother have, I am told, won the first prize at Birmingham. I first saw the light in the north, and am what I profess to be—simply a chicken of this year; not a bird hatched in the south late last autumn, and to whose spurs a hot potato has been applied to make him appear what he is not.

From the day I first chirped I have been fed upon the best of everything—have had a nice pen (of late all to myself), a grass field to run in, and a room at night that many a poor man might envy.

Last November my owner and feeder had many a long talk about me; they praised my comb, my large white face, my beautiful plumage, and I heard them say one day I was entered as a single cock at the great Show. I now got bread and milk and some white peas every day. At the end of the month I was taken into a room, my face well washed, and, after a feed of bread and ale, I was put into a basket with a straw bed at the bottom of it, honoured by a first-class place in the guards' van, and carried quickly towards Birmingham. When I got there I found at the station hundreds of baskets like the one I was in; and the porters handled us sometimes in a way that our owners would not have thanked them for had they been present. We were then placed in a van, and, about roosting-time, I found myself within the doors of the far-famed Bingley Hall.

There I fell asleep, nor did I awake until they were moving my basket, and a stout, bustling man, everybody spoke to as "George," and who was continually singing the praises of "us Birmingham chaps," told them to bring me along. They asked which side I belonged to. A door then opened, and I found myself in a small wire pen on the lower tier.

In the morning I discovered, to my sorrow, that they had put me into one of the darkest places in the whole Exhibition, so I moped—all the crowing was taken out of me, and I felt my beauties could never be seen. A man brought me my breakfast, which I did not eat, and it was so dark that hardly anything could be seen.

Footsteps approached, and now four gentlemen—the Judges—came. The first, they said, was a clergyman; the next looked like a squire; the third was a tall man with dark eyes—he wore a white cravat, and walked past the pens in the twinkling of an eye, and he seemed too fast by half for the squire, who once or twice sat down; the fourth was a tall, stout person; he talked very knowingly, and must have been a man that had written all about poultry, both for exhibition and the table. All the others,

particularly the clergyman, seemed to take their cue from him, and to pay much attention to what he said. After looking at the pens in my class—I am certain they could not see me—one asked, "What have you got for the first?" So they compared notes, took another peep, had a bird or two out; but all was over in less than no time, and those who were present on Monday know the result. Those who were not there can see it in THE COTTAGE GARDENER.

On Sunday morning, and before the press or the public were admitted, they again brought me my breakfast, leaving open the door of the cage I was in. This was a chance not to be lost, so I hopped out, and had a peep of my own, long before the private view on Monday. I first saw two very nice Spanish hens that had won, and much should I have liked them for wives; the pullets I did not care so much for. Then I saw written up *silver plate*. The cock chicken in this pen must have been a very early-hatched one, and so must each of the pullets. I saw, also, in this class, in a prize pen, a cock that made me wonder if nature or art had manufactured his comb. Many of the Spanish birds had been shaved, and had not been treated as I had been. My owner says that "Beauty unadorned is adorned the most;" and "that those great Judges, Mr. Hewitt and Mr. Baily, do not like Spanish to be trimmed." This is all moonshine, as I saw the contrary with my own eyes, and my feeder said to one that was there I should be sent, like the rest of them, to the next Show. I then went to the old Spanish, and put my head under my wing a time or two to see if there were any dust in my eyes. I found, however, true enough, that the first prize had been given to a fat gouty old gentlemen with three fighting wives. He had no tail, but, to make up for this, one side of his large face was yellow, and the other ornamented with an immense scab.

"Qui color albus erat, nunc est contrarius albo."

I heard a very knowing man say during the Show that they had given him the prize for what he had been!

I was now going to have a peep at the Game, for I had heard some wonderful things about them, and where many of the prize birds had been at walk, and to whom they belonged; but at this moment George cried out, "Don't you see that Spanish cock has got out of his pen?" so they caught me, and took me back again. But my owner says now I am at home I am all right again, and that I am to go to many great Shows this year, even though I am through the moult; have got a tail; have a pure white face, without scabs, and without a yellow hue—even from jealousy.

I expect next time to be in a better place where my beauties can be seen; and as I have now found out a way to open the door of my pen, and as the days will be very light soon, I shall hop out before any one is up in the morning, and, therefore, I trust the crow of the Spanish Cock will in the pages of THE COTTAGE GARDENER inform its readers of the sayings and doings of our principal Exhibitions yet to come.

DARLINGTON AND NORTHERN COUNTIES POULTRY EXHIBITION.

WE need only say that on Wednesday, December 12th, and following days, the eighth annual Exhibition of Poultry was held at Darlington; and our readers will be convinced that town not only holds no mean position in the poultry world, but also that there is a most flourishing Society—which is not to be wondered at when we take into consideration the advantages it possesses over some Shows, in having two such staunch and energetic supporters as the worthy Honorary Secretary and Mr. F. Mewburn, jun., the for-many-years-well-known and successful exhibitor of Pigeons; and in the course of the report of this portion of the Show, we shall have occasion to call particular attention to some of his birds.

The Show was held in a building in the Market Place, specially erected for the occasion and admirably suited to it in every respect save one—that being a want of light, some of the lower pens being almost in the dark, which makes it almost impossible for the visitors to see the birds, and must add much to the labour of the Judges; but we are assured upon good authority that this evil will be remedied another year. With this preface we will commence a review of those classes which call for particular mention.

The first appearing on the prize list was the *Spanish*, Mr. Hyde taking first for both old birds and chickens. Messrs. Dixon and Branfoot also showed good birds.

In old *Dorkings*, Mr. Berwick obtained both first and second prizes with two excellent pens; but he was hard run by the Rev. J. Newton and Mr. Burn. The Whites were a very inferior class. Of Dorking chickens there were eighteen as good pens as are often seen together—so good that the Judges commended the whole class.

In *Cochins* Mr. Tomlinson again added to his honours, taking first for old Cinnamon and Buff, and also first for chickens of any variety. Mr. Stretch taking second for old, and third for chickens.

There were no less than eighty-four pens of *Game* fowls, with but few exceptions all good birds; but if asked to particularise, we should mention Mr. Adams' old Duckwings, and Mr. Julian's Black Red chickens, as being especially good.

The *Hamburghs*, if we except Mr. Tate's old Golden-spangled and Mr. Smith's Golden-pencilled chicken, were not good. In the chicken class there were thirty-three pens, but many amongst them were very inferior, twisted combs and red ear-lobes being prevalent. The Silver-pencilled were all very inferior, there being scarcely a good pen in the class.

As might have been expected, Mr. Dixon obtained first and second prizes for both old and young *Polands*. His birds were very good. If Poland breeders do not bestir themselves and increase the number of entries at Shows, Committees will be compelled to do away with a class for that breed of fowls and give the prizes to some breed which supports them better, as it is useless for them to continue a class by which they lose money year after year.

In the "Variety" class Mr. Tate obtained first and second with Malays and Brahmas.

The Gold-laced *Bantams* numbered well. Silver only one pen. Amongst the Whites were many good birds. The *Game* were good in quality and strong in numbers, mustering twenty-three pens in this class. An extra prize was awarded to a pen of Furness, the property of Mr. Younger.

The Aylesbury *Duck* class added another triumph to Mr. Fowler's list, as he obtained first for old, and first for "Ducklings of any variety." The Rouens were not good, sufficient attention not being paid to the colour of the drakes' bills, what is at present rather a general fault, so many appearing with nearly and others with perfectly yellow ones. In the "Variety" class there were some good Call and East Indians.

In *Geese* and *Turkeys* Messrs. Dixon, Tate, and Fowler were successful.

Mr. Berwick took first for Dorking pullets with a beautiful pair of birds. He also obtained second for Dorking cocks. Mr. Graham taking first.

A cup, value £10, besides money prizes, was offered for *Game Cocks*, and brought twenty-three good birds into competition, and was won by a beautiful Brown Red, the property of Dutton Bayly, Esq. He was, however, hard run by Mr. Moss.

In addition to this class there was also a sweepstake for *Game Cockerels*. Messrs. Grimshaw and Moss being the successful exhibitors, the former taking first and third; the latter second.

In the *Game Bantam Cock* Sweepstakes, a very smart little Duckwing obtained first. He had, however, a formidable competitor in Mr. Crosland's Black Red.

The Show of *Pigeons* was in every respect excellent, the first class being Carriers, in which Mr. Mewburn obtained first with a remarkably fine pen of birds. There were also some good pairs of Almond and other Tumblers. In Trumpeters, Mr. Mewburn again obtained first with a splendid pair of birds. They also had awarded to them the special prize for the best pen of any other variety than Tumblers, Powters, and Carriers—one of two special prizes offered by Mr. Mewburn, both of which he most deservedly won. Mr. Ellington's Jacobins, and Mr. Cannan's Turbits, Owls, and Runts, were highly meritorious. But one pen of Archangels was entered, to those the first prize was most deservedly awarded. There were many good specimens in the "Variety" class, including Mr. Mewburn's Swallows and Russians—in fact, but few breeders can boast of such a good collection of birds, as this gentleman has proved by his success in nearly every class at this Show.

In concluding our report we cannot but congratulate the Committee on the great success of their Show, which is mainly due to the untiring exertions of the worthy Hon. Secretary and Mr. Mewburn, two most efficient and energetic supporters of the Society, and to whom the inhabitants of Darlington and the neighbourhood, as well as the poultry community generally, are much indebted for the treat they afforded them, not without much labour and anxiety.

The Judges were Messrs. J. H. Smith, Skelton Grange, York; G. Saunders Sainsbury, Rowde, Devizes, Wilts; W. Smith, Beach Hill, Halifax; and T. Calloner, Whitwell, Chesterfield, for Poultry. Mr. W. Smith, for Pigeons.

SPANISH.—First, S. H. Hyde, Taunton Hall, Ashton-under-Lyne. Second, J. Dixon, Bradford. *Chickens*.—First, S. H. Hyde. Second, R. S. Branfoot, Sunderland. Third, C. Atkins, Sewer Cottage, Thames Bank, Pimlico. Commended, J. H. Craigie, Woodlands, Chigwell, Essex; R. Simpson, Scot's House, Gateshead.

DORKING (Coloured).—First and Second, H. W. B. Berwick. Commended, Rev. J. F. Newton, Kirby, Stokesley; Mrs. A. C. Pulleine, Crake Hall, Bedale; S. Burn, Whitby.

DORKING (White).—First, D. Parsons, Cuirden, Preston, Lancashire. Second, G. Pease, Southend, Darlington.

DORKING (Chickens of any variety).—First, T. W. Hill, Heywood, Manchester. Second, H. Adams, Beverley, Yorkshire. Third, H. W. B. Berwick, Helmsley. Highly Commended, H. W. B. Berwick; M. Hunter, Green Hammerton Hall; W. H. Bartlam, Henley-in-Arden.

COCHIN-CHINA (Cinnamon and Buff).—First, H. Tomlinson, Balsall Heath Road, Birmingham. Second, T. Stretch, Marsh Lane, Bootle, Liverpool.

COCHIN-CHINA (any other variety).—First, J. Stally, North Collingham. Second, Mrs. Hutchinson, Eggleston Hall. *Chickens*.—First, H. Tomlinson, Birmingham. Second, R. Loft, Woodmansey, Beverley. Third, T. Stretch, Bootle. Highly Commended, T. Stretch; W. Dawson, Hopton Mirfield. Commended, J. Stally, North Collingham.

GAME (Black-breasted and other Reds).—First, Messrs. W. and N. Grimshaw, Pendle Forest, Burnley. Second, G. Hellewell, Walkley, Sheffield. Highly commended, Messrs. W. and N. Grimshaw; H. Dawson, Beverley, Yorkshire. Commended, G. Pease, Southend, Darlington; H. Adams.

GAME (Duckwings, Greys, and Blues).—First and Second, H. Adams, Beverley.

GAME (any other variety).—First and Second, H. Adams, Beverley.

GAME CHICKENS (any variety).—First, H. M. Julian, Market Place, Beverley. Second, G. Hellewell, Walkley. Highly Commended, H. Adams, Beverley; T. Dods, Halifax. Commended, D. Parsons, Cuirden, Preston; Messrs. W. and N. Grimshaw.

HAMBURGH (Golden-pencilled).—First, J. Dixon, Bradford. Second, G. S. Simpson, Hunmanby.

HAMBURGH (Silver-pencilled).—First, J. Dixon, Bradford. Second, R. Tate, Driffield.

HAMBURGH (Golden-spangled).—First, R. Tate, Driffield. Second, H. Beldon, Burkerend Road. Highly Commended, Miss M. G. Smith, Dinsdale Rectory; H. W. B. Berwick, Helmsley. Commended, H. Adams, Beverley.

HAMBURGH (Silver-spangled).—First, H. Beldon, Burkerend Road. Second, T. Younger, Dock Street East, Monkwearmouth. Commended, J. Dixon, Bradford.

HAMBURGH CHICKENS (any variety).—First, S. Smith, Northowram, Halifax. Second, T. Thompson, Wide Open, Newcastle. Third, J. Dixon, Bradford. Highly Commended, Lieutenant-Colonel Colling, Red Hall, Darlington; H. Beldon, Burkerend Road; T. H. Turner, Fir View, Sheffield. Commended, J. Dixon.

POLANDS (any variety).—First and Second, J. Dixon, Bradford. *Chickens*.—First and Second, J. Dixon. Third, withheld.

ANY OTHER DISTINCT BREED.—First and Second, R. Tate, Driffield. Third, J. Dixon. Commended, W. Dawson, Hopton, Mirfield.

BANTAMS (Gold-laced).—First, F. Mewburn, jun., Larchfield, Darlington. Second, L. Arpleby, Middleton, Lodge, Darlington. Highly Commended, J. Dixon, Bradford.

BANTAMS (Silver-laced).—Prize, F. Mewburn, jun., Larchfield, Darlington.

BANTAMS (White).—First, J. Crossland, jun., Wakefield. Second, F. Hardy, Bowling Old Lane, Bradford. Highly Commended, G. Robson, Hull.

BANTAMS (Black).—First, E. Hutton, Pudsey. Second, J. Dixon.

BANTAMS (Game).—First, W. R. Holmes, Union Street, Ulverston. Second, D. Parsons, Cuirden, Preston. Extra Second, T. Younger, Monkwearmouth. Third, J. Thornton, Heckmondwike, Leeds. Highly Commended, H. E. Ellis, Northallerton. Commended, R. Tate, Driffield; E. Hutton, Garden House, Pudsey.

DUCKS (Aylesbury).—First, J. K. Fowler, Aylesbury. Second, S. Burn, Whitby.

DUCKS (Rouen).—First, J. Craw, Jedburgh, N.B. Second, J. Dixon, Bradford. Highly Commended, T. H. Barker, Hovingham, Yorkshire; R. Tate, Driffield.

DUCKS (any variety).—First, J. Dixon, Bradford. Second, S. Burn, Whitby. *Ducklings*.—First, J. K. Fowler, Aylesbury. Second, Miss Wetherell, Aldbrough. Third, T. H. D. Bayly, Biggleswade, Beds. Highly Commended, Miss Witherell; J. Dixon, Bradford; R. Tate, Driffield.

GESE.—First, J. Dixon, Bradford. Second, R. Tate, Driffield. *Goslings*.—First, R. Tate. Second, J. K. Fowler, Aylesbury.

TURKEYS.—Prize, J. Dixon, Bradford. Highly Commended, Miss J. Wood, Romanby, Northallerton. *Poults*.—First, J. Smith, Sedgbrook, Grantham. Second, G. Pease, South End. Highly Commended, G. Pease, South End; R. Tate, Driffield.

GUINEA FOWL.—Prize, W. White, Ricknall Grange, Darlington.

DORKING PULLETS (any variety).—First, H. W. B. Berwick, Helmsley. Second, W. Grey, Darlington. Highly Commended, H. W. B. Berwick.

GAME PULLETS (any variety).—First, E. Akroyd, Darlington. Second, H. Beldon, Burkerend Road. Highly Commended, T. Dodds, Halifax. Commended, J. Hull, jun., Poulton-le-Fylde.

SINGLE DORKING COCKS (any variety).—First, J. Graham. Second, H. W. B. Berwick.

SINGLE COCHIN-CHINA COCKS (Cinnamon and Buff).—First, T. H. Barker, Hovingham, Yorkshire.

SINGLE GAME COCKS (any variety).—First, T. H. D. Bayly. Second, H. Moss, the Beach, Aigburth, Liverpool. Third, J. Crossland, jun., Wakefield. Highly Commended, Messrs. W. & N. Grimshaw; J. Fletcher, Stoneclough, Manchester; D. Ashworth, Thomas Street, Halifax; H. Adams, Beverley.

SWEEPSTAKES FOR GAME COCKERELS (any age or colour).—First and Third, Messrs. W. & N. Grimshaw. Second, G. H. Moss, Liverpool. Highly Commended, J. Hull, jun.; H. Adams, Beverley; T. Dodds, Halifax.

SWEEPSTAKES FOR GAME BANTAM COCKS (any age or colour).—First, J. Hull, jun. Second, J. Crossland, jun.; D. Parsons, Cuiriden, Preston.

PIGEONS.—*Carriers.*—First, F. Mewburn, jun. Second, W. Cannan, Bradford. *Pouters.*—First and Second, F. Mewburn, jun., Larchfield, Darlington. Highly Commended, G. Robson, Hull. Commended, W. Cannan, Bradford. *Almond Tumblers.*—First, T. Thompson, Newcastle. Second, J. Percival, Clent Villa, Harborne. Highly Commended, E. A. Haywood, Villa Road, Handsworth. *Tumblers* (any other variety).—First, D. Barker, Hull. Second, W. Watson, Beverley. Highly Commended, J. W. Edge, Aston New Town. *Fantails.*—First, A. Cattley, York. Second, F. Mewburn, jun. Hen Highly Commended, D. Barker, Hull. *Trumpeters.*—First and Second, F. Mewburn, jun., Darlington. Four Highly Commended and one Commended, F. Mewburn, jun. *Barbs.*—First, D. Barker, Hull. Second, W. Cannan, Bradford. *Jacobins.*—First, T. Ellington, Woodmansey, Beverley. Second, F. Mewburn, jun. *Turbits.*—First, W. Cannan. Second, F. Mewburn, jun. *Owls.*—First, W. Cannan. Second, F. Mewburn, jun. *Archangels.*—Prize, F. Mewburn, jun. *Runts.*—Prize, W. Cannan. (No second prize given). *Nuns.*—First, J. J. Wilson, Darlington. Second, W. Summerson, Haughton-le-Skerne. *Best Pair of any other new or distinct variety.*—First, F. Mewburn, jun. (Swallows). Second, F. Mewburn, jun. (Russians). Third, T. Thompson (Dragoons). Commended, F. Mewburn, jun.

CRYSTAL PALACE EXHIBITION OF POULTRY.

WE are much pleased to assure our readers that the Exhibition just closed has proved a most successful one, and not in any way inferior to those that have preceded it. It is far more gratifying to note so agreeable a conclusion, from the fact that not a few amateurs boldly asserted that the Birmingham and Crystal Palace Shows would most materially injure the prospects of both from (under a fresh arrangement), falling on consecutive weeks. We admit, so general was the opinion thus expressed, that we ourselves felt the possibility of a material diminution of both the numbers of the entries, and yet more so of the quality of the birds themselves, which is a far more important feature in all such meetings. On the contrary, we were most agreeably surprised to find that never before has so goodly an array (taken in the aggregate), been presented to the visitors of the Palace of both the useful and also ornamental varieties of poultry.

The arrangements of the executive were far in advance of those of last winter Show; and it must be a matter of great pleasure to the respective owners of such choice rival pens of poultry to know that hot-air pipes had been carefully provided for the equal distribution of sufficient warmth throughout; and the truly comfortable condition of the birds themselves proved that the outlay, though considerable, was money well laid out, and a boon which the owners of so valuable a collection would duly appreciate. The general arrangements of the pens pretty closely coincided with those of prior Shows, and the careful management as to feeding, &c., was complete; but we shall have to record next week some complaints about the railway arrangements.

On entering the Show the class that first met the eye of visitors was the adult Spanish, and an exceedingly superior class they proved themselves. It will be seen Mr. Rake, of Bristol, showed the superiority of his well-known strain by securing both first and second premiums; Messrs. Lane and Teebay being also well represented. In the chickens, though from the season somewhat backward, the Show stood far better than most meetings of this year. The Rake birds still again stood foremost, closely followed by Messrs. Rodbard, Smith, and Lane. The Spanish hens or pullets, as a class, were not so good as we should have anticipated. Spanish cocks of any age stood forth well, the Rake birds again proving too good for their rivals—both first and second prizes falling to their lot, Mr. Wright being a good third. The Grey Dorkings were one of the chief features of the Show; and it is somewhat remarkable that, although the previous week only not a solitary rose-combed Grey Dorking was to be found throughout the Birmingham Exhibition, several first-rate pens were competing at the Crystal Palace. The chickens were quite equal to the old birds. The prizes in these classes were obtained by the Marchioness of Winchester, Lady Louisa Thynne, the

Hon. W. W. Vernon, Captain Hornby, and other well-known exhibitors. The White Dorkings were wonderfully improved compared to those exhibited even so recently as last year; much credit is due to Captain Beardmore for the very superior condition of his birds. The class for Dorking cocks (any colour) was one of the best in the Show. Lady Louisa Thynne again stood in the van with a most beautiful specimen, and even the second-prize bird belonging to the same lady being but little inferior; Mr. Botham showing a very superior bird for the third position. The first and also third prizes for Buff (adult) Cochins went to Birmingham men—Messrs. Cattell and Tomlinson. Mrs. Fookes' second-prize birds were also very good. A better class generally has been seldom seen; but the chickens of this variety were not nearly so good. Messrs. Musgrove, Stretch, and Cartwright made a very goodly Show of Partridge-coloured Cochins, and the classes for Whites were decidedly superior. The best Show of Game fowls by far ever yet collected within the Crystal Palace was the present one, and by consulting the prize list every one will perceive the premiums in these classes were even more widely sown than ever. The adult Duckwings well merit peculiar mention. Of all the Hamburg classes those for the Golden-spangled and Golden-pencilled were decidedly the best, most of our principal exhibitors sending perfect pens. The Polands throughout were first-rate; the Silvers and Blacks being the best varieties. The Malays were remarkably good. The class for "any distinct variety," we were sorry to find, presented no new feature. The Sebright Bantams were better by far than this time last year, but still not nearly equal to our recollections of our Shows some six or eight years back. The Black Bantams were universally excellent, and the White ones were most creditable. The Game Bantam classes were fully equal to those of Birmingham, and, as at the latter place, formed one of the most universally attractive features of the Show. Some really capital pens of the old spotted Booted Bantams were shown in the "any variety" class.

The Geese, Turkeys, and Ducks were as good as we remember seeing for some years past; but not a few pens, when tested by the scales, showed how extraordinarily their weight had been affected by their long sojourn at Birmingham, and immediate transmission to the Palace.

The Pigeons and Rabbits were remarkably good; but in the Pigeons we deeply regret to say (as at Birmingham) there were to be found cases of "trimming," or colouring, that when discovered, as they generally are by the practised eyes of experienced Judges, not only lead to disgrace to the exhibitor personally, but also tend to degrade a pursuit otherwise popular. We are informed the Judges are determined to openly expose all such pretenders for the future in every case without regard to individuals; and they do rightly by so doing.

CHIPPENHAM POULTRY EXHIBITION.

THE Chippenham Agricultural Association held its annual meeting on Friday, December 14th, and in connection with it its Poultry Exhibition; and although the number of pens was something less than a hundred, some of the classes were well filled, but in others there was but little or no competition. The classes especially worthy of notice were the Dorkings, Game, Cochins, and Hamburgs; and amongst them, as might have been expected, the Game were by far the most numerous, though not by any means the best classes as regards quality, sufficient attention not being paid to the matching of the legs of all the birds in a pen, instances being far from uncommon of all the birds in a pen having different-coloured legs. But for quality of the birds no class surpassed the Dorkings, though in the Hamburg classes there were some good pens of Gold and Silver-pencilled and Gold-spangled; and in them we would especially mention the Rev. C. J. Down's Gold-spangled old birds and chickens, the earlobes of his birds being remarkably clear. His hens were also well marked, but we thought his cocks rather too dark. Mr. Withington's Gold-pencilled were also very good, as were Mr. Keable's Silver-pencilled. But one pen of Silver-spangled were entered, and those were not considered worthy of a prize. The worst classes in the whole collection were, undoubtedly, the Polands and Sebright Bantams. Three prizes out of four were withheld from the former, and both from the latter—in fact, in the Sebright class there was only one pen entered, which did not bear the slightest similarity to that breed of fowls, having long flowing tails, and being nearly as large as Pencilled

Hamburgs, and quite as much like them as **Laced Bantams**. We cannot but think they were sent for a joke. In the class for **White and Black Bantams** but one pen of the latter was entered, and to them the first prize was awarded. There were some good birds amongst the **Turkeys** and **Geese**. In the former **Miss Milward** showed very fine specimens, and **Mr. Brown** in the latter; this gentleman's pen weighing 58 lbs. The **Aylesbury Ducks** were far surpassed in numbers and quality by the **Rouens**. In this latter class **Mr. Hanks** and the **Hon. G. Howard** showed beautiful birds; but in many otherwise-excellent pens sufficient attention had not been paid to the colour of the drakes' bills, which exhibitors seem to forget ought not to be of a bright yellow, but to resemble as nearly as possible that of the wild **Mallard**. In the extra class, a bounty of 10s. was awarded to a pen of **East Indian Ducks**. There were also some good **Silgies** in this class.

We hope before another year to see a rather better arrangement of the prize list, and a larger and better Show will be the certain result.

The Judge was **Mr. George Saunders Sainsbury**, Rowde, Devizes, Wilts.

DORKING.—First, **G. Hanks**, Malmesbury. Second, **Miss Wilcox**, Nailsea Court. **Chickens**.—First, **Miss Milward**, Newton St. Loe. Second, **Capt. Ward**, Calne.

SPANISH.—First, **Master H. J. Brinkworth**. Second, **Mrs. Holford**, Weston Birt. **Chickens**.—First, **Mrs. Holford**. Second, **A. Heath**, Calne.

GAME (Black-breasted and other Reds).—First, **Miss A. Elling**, Sutton Parva. Second, **Mr. Fox**, Devizes. Highly Commended, **G. Hanks**, Malmesbury.

GAME (any variety).—First, **R. Elling**, Sutton Veny. Second, **W. Long**, Devizes. Highly Commended, **Mr. Vick**, Chippenham. **Chickens**.—First, **Mr. Fox**, Devizes. Second, **Mr. Lamb**, Highworth. Highly Commended, **Mrs. Holford**, Weston Birt; **Mr. Sloper**, Seend. Commended, **F. Bailly**, Calne; **Mr. Phillips**, Chippenham.

COCHIN-CHINA (any variety).—First, **J. Long**, Devizes. Second, **Mrs. Holford**, Weston Birt. **Chickens**.—First, **T. Bridges**, Croydon. Second, **Miss Milward**, Newton St. Loe.

HAMBURGH (Silver-pencilled and Spangled).—First, **T. Keable**, Rowde. (Second withheld.)

HAMBURGH (Gold-pencilled and Spangled).—First, **Mr. Withington**, Devizes. Second, **Rev. Mr. Down**, Semington.

HAMBURGH CHICKEN (any variety).—First, **Rev. Mr. Down**, Semington. Second, **Mr. Keable**, Rowde.

POLAND CHICKEN (any variety).—First, **G. Ray**, Lindhurst. (Second withheld.)

BANTAMS (White and Black).—Prize, **Mr. Fox**, Devizes.

CROSS-BREEDS.—First, **Rev. Mr. Horlock**, Box. Second, **Mr. Fox**, Devizes.

TURKEYS.—First, **Miss Milward**, Newton St. Loe (French). Second, **Mr. Sly**, Thaulstone Farm. Commended, **Mr. Wheeler**, Lacock (Norfolk).

GEESSE.—First, **T. Brown**, Horton. Second, **Mrs. Bridges**, Dauntsey. Highly Commended, **Hon. G. Howard**, Charlton. Commended, **Mr. Cox**, Frome.

DUCKS (Aylesbury).—First, **G. Hanks**, Malmesbury. Second, **Mr. Batley**, Sheldon. Commended, **Mr. F. Crang**, Timsbury.

DUCKS (Rouen).—First, **Miss S. Hanks**, Malmesbury. Second, **Hon. G. Howard**, Charlton. Highly Commended, **Rev. Mr. Horlock**, Box. Commended, **W. Higgins**, Chippenham.

EXTRA STOCK.—Prize, **Mr. Phillips**, Chippenham (Black East Indian), Chippenham. Commended, **Rev. Mr. Horlock** (Silk Fowls).

PREPARING POULTRY FOR MARKET.

MESSRS. B. & S. BEATTY, of Cayuga county, New York, are large poultry breeders, and furnish the following general instructions for preparing poultry for market:—

"Never kill a bird unless it is fat. Never cut off the head of a Turkey or Goose, but hang them by the heels where they cannot bruise themselves in the death struggle, and stick them with a small knife and bleed them to death. Ducks and common fowls, if decapitated, should be held or tied and hung up to bleed to death. Never kill your birds with full crops, you will lose in price more than you gain in weight. Never strangle them, so as to leave the blood in. The best plan is to tie all kinds of birds to a line drawn from post to post, or tree to tree, and stick them just in the forward end of the neck.

"You may pick all sorts of birds dry, if you don't tear the skin; but you must scald them afterwards by dipping them suddenly in and out of boiling water. Don't scald the legs too much, whether you pick first or afterwards. Be careful of that. You must pick them clean, and the after-scalding makes them look plump and good.

"Never draw a bird. It is worth while to pay freight on

intestines, because meat cannot be kept sweet long after they are drawn and the air admitted inside of the body.

"It is a practice of some of the best poultry-men, after the birds are plucked to plunge them suddenly into boiling water, and then immediately into cold water. This gives them a clean, plump appearance, and makes them look fat if they are in decently good condition when killed. Nothing, however, can make a poor bird look well, while ill dressing will make the best look poor.

"Lay the birds upon clean boards in a cold room till perfectly cool, but not frozen; as at all times, but especially when there is a probability of damp, close weather, great care must be taken that the animal heat is out of them; and then pack in boxes with clean rye and oat straw so that they must not touch each other, about three or four hundred pounds in a box, filled full; mark the contents on a paper inside, and on the lid outside, and direct it to your commission merchant plainly, and send it by the express, and the invoice by mail.

"Never kill your birds on a damp day, nor pack them, if you can avoid it, except in a clear, dry, cold atmosphere; and try to avoid night work when you are tired and your help sleepy, and all of you careless.

"No matter how light your boxes are, they must look clean, or your poultry will not sell at first prices. In packing, press the wings close, and press the bird down hard on the breast, the legs extending back, and fill each course full, and then lay on straw and another course of birds. Nail tight, but don't let a nail project inwards to tear the bird.

"Give your name and residence in full on the bill in the box and on the invoice by mail.

"Never pack in barrels if you can get good dry-goods boxes, as the rolling of barrels injures the poultry. Well-packed boxes of well-prepared birds will keep sweet for a long time in cool weather, and may be transported by express or by rail, and arriving in good order can be sold readily at the highest prices."

We trust that these remarks may enable our friends to secure a good market for their poultry, and cultivate a branch of trade to material profit and advantage.

The late **M. Soyer** states the best way of killing poultry is to take the bird by the neck, placing the thumb of the right hand just at the back of the head, closing the head in your hand, your left hand holding the bird; then press your thumb down hard and pull the head and neck contrariwise, the neck will break instantaneously, and the bird will be quite dead in a few seconds; then hang it for a short time by the legs for the blood to flow into the head, which renders the flesh much whiter. "In France (he adds) we usually kill them by cutting the throat close to the head. Both methods are good with regard to the whiteness of the flesh; but I prefer the English method, not being so barbarous."—(*Prairie Farmer*.)

FIRST-PRIZE GAME COCK IN THE CRYSTAL PALACE SWEEPSTAKES.

WE assigned a wrong owner to this bird in our report. It belongs to **Mr. William Rogers**, of Woodbridge, Suffolk, and ought to have been in Pen 939. It was placed by mistake in Pen 934, for the Judges, and hence our error as to ownership, but as **Mr. Houghton** discovered it was an error before the awards were printed, but did not then know the owner's name, he was compelled to append to the first prize "owner unknown." Upon **Mr. Rogers** coming to the Show he claimed the bird, and as he had no doubt of his identity, and the bird had a mark in his foot where he was caught in a rat-trap, **Mr. Houghton** eventually put up a card with **Mr. Rogers'** name as the owner. There were fifty-four entries for the Sweepstakes at 10s. each, amounting to £27, which was awarded as follows:—

| | |
|---------------------|----------|
| First prize | £10 10 0 |
| Second prize..... | 5 5 0 |
| Third prize | 4 4 0 |
| Fourth prize..... | 3 3 0 |
| Fifth prize | 2 2 0 |
| Sixth prize | 1 1 0 |
| Seventh prize | 0 15 0 |
| | 27 0 0 |

GIGANTIC POULTRY-YARD.—A speculator is erecting in Chicago (Illinois), a large hennery, two stories in height and two

or three hundred feet in length. He expects next spring or summer to have about 6000 samples of the choicest American and European breeds of hens and cocks.—(*American Paper.*)

RABBIT-KEEPING—HIMALAYAS—ANTWERPS.

I AM pleased to see the subject of Rabbit-keeping taken up with such spirit in your valuable paper.

When travelling on the Continent, and seeing the quantities of Rabbits being prepared for shipment to England, I have often felt surprised that a country with every facility for breeding the same should be dependant for a supply from another country. I am a great lover of Rabbit's flesh, and have often spoken of this subject to my country friends: when the reply has been, "Rabbits are the most unprofitable of all live stock."

In some cases I have induced them to try the experiment, and without one case of failure. I agree with "R. S. S." in his mode of feeding and breeding in large courts; and it will tend to induce many persons to keep them. Whereas, in hutches they would be objectionable on account of the unpleasant smell emitted, besides the nuisance of constantly cleaning out.

There are two or three varieties which I should like to see introduced. I am pleased to think the Himalayan are being cultivated. They are one of the best kinds to keep. I fear the description you gave to one of your correspondents may prejudice them. You stated they are small; but I have found these the best for table use, profit, or amusement. I have two does which I weighed this morning, one 8 lbs., the other 7 lbs. These cannot be called small Rabbits.

Mr. Woolf, in his writings in the "Proceedings of the Zoological Society, 1859," states they are the handsomest and most interesting of the species. He states their skins have realised very high prices at Leipsic fair, when ermine was in fashion at Berlin, and to which the above are converted in imitation.

The other variety I prefer is a blue or slate-coloured Rabbit, with upright ears, and very large, often weighing 14 lbs. when full grown. I have seen them on the Continent, but never here. I think they are called Antwerps. I have a friend in Belgium to whom I intend writing, and commissioning to buy me a few.—LOUIS DOUBOIS.

BEE FEEDING.

THIS unparalleled bad honey season has caused me, as well as other apiarians, to take extra care for the lives of their bees. It is not the fault of "my peoples" if they have not provided themselves with sufficient store and to spare, for they have struggled hard to gain an independence, even to the sacrifice of many of their lives.

I once had the pleasure of being introduced to your late amiable correspondent's (J. H. Payne, Esq.) apiary by himself. Hives of high and low degree were there, and I distinctly remember, amongst other advice, his condemnation of beer and brown sugar as bee food. It may interest you when I say that I called on Mrs. Payne the last time I was at Bury St. Edmund's, about two years ago. She had left her residence in the Hatter's Street, where the apiary was, in the centre of the town; but she informed me that "all her poor bees were dead—they missed the kind care of their late master, who was good to everything." The artificial food I always recommended is from Mr. Payne's original receipt—viz., 1 lb. of loaf sugar, $\frac{1}{4}$ lb. of honey, and $\frac{1}{2}$ pint of water to be dissolved in a stewpan over a slowish fire.

Providentially almost for my bees, I had a good store of honey by me this autumn, and the reason why is curious. Last year I sent you word that London was overflowing with thin, light-coloured honey (one lot smelling villainously of onions!) the shade that Cockaigne prefers, and, of course, the dealers were compelled to be fastidious. The man of the honey department at Messrs. Fortnum & Mason's turned his face at once on my sample of lime honey, which was very good, though slightly dark-coloured, accountable to a honey dew which the bees gathered from the beech trees when the lime trees were in blossom. Messrs. Fortnum & Mason purchased my early samples, and so, with a never-mind-it-does-not-the-least-signify air, I brought home again 40 lbs. of honey in supers; for, to tell the truth, I was too proud to offer it again after having been once refused, and got terribly quizzed by the rector at taking it to so fine a market; but the fortuitious circumstance has enabled me to add, in lieu of the $\frac{1}{4}$ lb. as above, $\frac{1}{2}$ lb., and less sugar to my bee

food, and the benefit of that despised honey to the bees now, and for my prospects in the future, I hope I shall be enabled to let you know.

I have found it necessary to supply my four hives with 80 lbs. of food this autumn, 40 lbs. were given at the beginning of August, and 40 lbs. at the end of October. I send you a mental and bodily description of a contrivance of my own by which I administered it.

Procure an empty fig-drum having a depth of—say $6\frac{1}{2}$ inches, take out the bottom and refix it an inch and a half higher up, filling any cavities that may remain with hot glue around it or up the original closing at the side. Cotton wadding forced in firmly with the blade of a shut knife is also not a bad substitute. Around the circumference at the bottom of the drum cut three arched spaces, rising an inch at their apex, and leave between each about three inches of the original base as supporters. At opposing diameters inside fix two uprights $4\frac{1}{2}$ inches deep, and four-eighths by three-eighths of an inch in substance, with small screws from the outside. Then cut a circular piece from the lid of a papered hat-box, about one-eighth of an inch smaller in circumference than the inside of the drum, and form two opposite grooves to relieve themselves well of the uprights. Tin tack two thin strips of deal parallel an inch apart across to prevent warping. Tack on the opposite or under side, at right angles, four pieces of a cork cut three-eighths of an inch thick; and with a bare bodkin or knitting-needle red hot pierce a quantity of holes over its whole surface, forming one central hole half an inch in diameter, and secure therein a strip of bended zinc three-quarters of an inch deep, to answer for a handle, *vice versa*, to the corks which are beneath, in order to allow the bees to clear out all the food through their agency, and the central tube when the self-acting floats have reached the bottom. It effectually secures the bees from death by immersion in its progress downward, and it is a rare sight to watch them at a midnight feast of this kind. It is gluttony perfectly typified, though really to be understood in the opposite sense as regards our little friends.

My hives are made of straw throughout, with flat tops, after the model of Mr. Payne's cottage-hives, but larger, being 16 inches outside diameter by 11 inches deep, and each hive containing fully as many as three times more bees than are usually found in common-sized hives. They have central holes in their tops 4 inches in diameter, and thin plaited straw fastened over them with three or four cast wall nails. I have four-eighths-of-an-inch adapting-boards 14 inches square, with central holes corresponding to those in the hives, and fitted with moveable deal fillets about an inch deep. When I find occasion to feed in autumn I proceed as follows:—I cut a strip of thick cotton wadding about 2 feet 6 inches long by 2 inches broad, and encircle it upon the top of the hive, then quietly and quickly ply up the piece of plaited straw, immediately lay on the adapting-board, and slip the fillet down upon the top of the hive, being very particular to see that no part of it remains above the surface of the adapting-board; the fillet refuses the bees admittance under the board, for the central parts of straw hives are generally become sunken a little, more or less. Place the feeder upon the adapting-board over the orifice, and a large bell propagating-glass over the feeder; then, with a goose's wing—which should always be at hand in all bee operations—waft off those that may be running about the board, and cover the glass with an overall-hive, and surmount that with a large milkpan, which weighs the overall-hive upon the adapting-board, which presses the cotton wadding into the irregularities on the surface of the stock-hive, defying earwigs, woodlice and all other insect depredators. In the course of half an hour listen at the outside of the hive, and you will hear a sound as of a resounding sea.

I apply my depriving-glasses and supers during the honey-gathering time on the above adapting-board plan; and my overall-hives are made 13 inches in diameter, 1 foot deep, flat at top, quite level at the bottom, and minus the bee-entrance. My feeder holds 8 lbs. of food. I supply it to the hives about six P.M. in August, five P.M. in October, and by nine next morning my bees have generally stored the food, and mostly forsaken the feeder about eleven A.M. I then spread a piece of matting before the hive, remove the pan, overall-hive and glass, and feeder; and when no more food is to be given the feeder is placed on the matting. I take off the adapter and cotton wadding, waft off the bees from the top of the hive, secure the piece of plaited straw instantaneously over the hole, and replace the milkpan on the stock-hive. With the wing I then move off what bees

there are loitering about the feeder on to the matting; because, in October especially, the ground is apt to be damp and cold, and the bees, either from being gorged or taken suddenly from the warm temperature of the hive, when they are brushed on the cold ground they become numbed, and rise never more: whereas, alighting upon the comparatively warm dry matting they soon recover, and return to their hive. When more food is to be given them I merely replace the bell-glass overall-hive and pan, and return the feeder replenished in the evening as above stated. Never feed them during the daytime—it incites the bees to roystering, and to go gadding about, and, what is worse, their portal is left in a great measure unguarded, which awakens in their neighbours their never-failing propensities for fighting and stealing.

There must be, however, a distinction and a difference made in feeding bees; and I give you a drawing of another contrivance

ZINC BEE-FEEDER FOR EARLY SPRING USE.



- Length of feeder, ten inches.
- 1. Breadth of ditto, one inch and a half.
- 2. Depth of ditto, two-eighths of an inch.
- 3. Length of handle, one foot.
- 4. Diameter of handle, three-eighths of an inch nearly.

For early spring use which I have used for some years to my satisfaction. It is so simple that a child can apply it without danger to itself or the bees either; it has merely to be entered at the bees' entrance in the dusk of the evening, and drawn away again the first thing next morning. It holds between two and three table-spoonfuls of honey, and less than that will be found quite sufficient at a time for this period.

My practice has taught me that bees continually refuse to take advantage of artificial food, or pure honey even, when supplied at the tops of the hives in the spring time of the year; but I have never found mine refuse either when supplied to them at the bottom. Besides, a great evil arises from loss of heat when the hives are interfered with above in February, March, April, or May; for loss of temperature retards breeding—the earliest object of all their arrangements. When I was forming the drum-feeder a bright conception arose in the vicinity of my tympanums. Thought I, it would enable me to supply a quantity of artificial food in the beginning of May, and how cunningly I would incite the bees to work their combs and fill their cells, and be all ready for the supers by the first blossoming of the sycamore trees! But the bees knew better; they would have none of the bounty, and refused to be forced contrary to their natural habits.

The present is a very proper time for me to state that the milkpans have sloping sides 8 inches deep, and measure 2 feet for their largest or lip diameters; they are the only coverings I have ever used for my hives through the variable vicissitudes of ten years, during which time they have proved quite sufficient to preserve the bees in perfect health. Next February three years I was at Sympstone, near Exeter. A lady there, who had set up a small apiary the year previous, invited me to go and inspect it. The hives were covered with those abominations called straw hackles; on removing which from No. 1 we found the hive mouldy and damp. I placed my ear thereto, and tapped with my knuckle. No answer. My worst fears were realised; the bees were dead, and the combs in a horrible state. No. 2 not quite so bad, but the bees were no more. I advised this hive to be well brushed and dried, and the combs worked between with a turkey's feather, and the first swarm to be hived into it. No. 3, tap! tap! buz-s-s-s—all right! A new swarm—hive and hackle of the previous year which had not had time to do its work of death. I recommended the milkpan shelter for the future; and last year the lady wrote, "Tell—we are swimming in honey."

Should I ever become reconciled to a bee-house, I retain a structure in my mind's eye which I saw in 1852 at Altyre, N.B., the seat of Sir Gordon Cummin, Bart. The young man who accompanied us over the beautiful grounds there called it an "American Stand." It was a close-boarded structure, with first, second, and third floors. I should prefer two floors only, with breadth just sufficient to admit the hives in single rows side by side, and it was raised upon legs from off the ground. Alighting-lips were fixed opposite smallish openings cut through the front boards to correspond with the entrances of the hives inside. The roof, also of boards, was at an acute angle, with

projecting eaves. The back was formed by folding-doors secured by lock and bolt. I also remember one of "those insects" exercised the power, so useful to their community, upon the cheek of the gentleman who accompanied me; but I instantly extracted the *dissecta membra*, and very little pain or facial disarrangement ensued. Our guide, more cautious, remained at a respectful distance, wondering at the bees allowing me, a perfect stranger, to examine their works, and enter among them with impunity. It was in the sweet season of the heather bloom that I claimed friendship with that most industrious colony—UPWARDS AND ONWARDS.

OUR LETTER BOX.

DECISIONS AT BIRMINGHAM (A. H. S.).—When we look at the list of Judges we cannot but conclude that the probability is that their decisions were correct. Suppose, however, that you are right in your criticism, and that they made mistakes in the instances you mention, it would answer no good purpose to make the parties who did take, and the parties you consider ought to have taken, fruitlessly dissatisfied.

PRIZE GEESSE AT BIRMINGHAM (Subscriber and Exhibitor).—We are always glad to give any information in our power to our readers, and in this instance willingly give our own opinion in answer; but we must disclaim being able to give the reasons which induced four experienced gentlemen to award or withhold prizes. We believe mere weight is never considered of sufficient importance to command a prize unless it is allied to other necessary merits. The only exception to this rule would be a class of cross-bred fowls, bred for the purpose of getting size only. We believe in every class that frame, and consequently size, are more highly esteemed than weight. The latter may be the result of fat only, and the birds may be useless as stock. Again, a pen must match. Say there is a class for "Grey and Mottled," the birds composing the pen must be either one or the other. If it held two Grey and one Mottled it would not be likely to gain a prize; nor would the fact of its weighing six pounds more than one more perfect in colour give it precedence over it. In a Show like Birmingham Judges are obliged to be very careful in scrutinising every class; and we imagine the weights are more often mentioned to show that size and other merits may be joined, than to point them out as the heaviest birds in a class.

APRIL-HATCHED PULLETS NOT LAYING (Edgbaston).—It would enable us to answer your question with more certainty if we knew the breed of your fowls. If they are Cochins or Brahmas, and hatched in April or May, they should be in full laying now. If Spanish or other breeds it is likely they will not lay till next month. The hens naturally left off laying when they began to moult. The one that died was victim to a disease common among hens, particularly among Spanish. She would never have laid again if she had lived. We would advise you to discontinue Indian corn as food; it is far too fattening, and would rather retard than promote laying in the pullets—indeed, many die from no other cause than being too fat when they first begin to lay. Feed moderately on slaked oatmeal or ground oats three times a-day; or, if more convenient, give whole barley for the middle meal—they will then produce you eggs. The green cast you mention is the fat put on by the Indian corn.

FEEDING CONFINED POULTRY (Howlet).—As it stands to reason poultry in confinement get no food but what is given to them by hand, it will always be difficult to keep them as economically as those that have their liberty. First, provide good food—bad corn and meal are always dear. Feed entirely on ground food, and, as we have often explained, feed only so long as the birds *run* after it. When they become indifferent they are not hungry. The most economical plan is, meal in the morning, whole corn at mid-day, and meal again in the evening. If this is correctly and carefully followed you will be surprised at the small cost of your poultry. At this time of year the hens should be confined under their ribs till the chickens are ten or eleven weeks old, if possible, but the chickens should be at liberty to go out between the bars of the rip when they like. They do not grow so well in confinement.

BANTAMS IN A GARDEN (Nancy).—Bantams do little or no harm in a garden. We have known them kept in a most beautiful flower garden and the gardener did not complain. We cannot as easily answer when you ask if they will pay. As a rule, we should say they will not. Eggs must always have to do with remuneration from poultry, and Bantams' are too small. It is also necessary there should be something to fall back upon in the way of a market for faulty birds, and Bantams are too small. They are fancy birds, and it is hard to live by breeding them only.

PROFITABLE POULTRY (Idem).—The Black Poland with a white crest is not a bird that is much kept, and we do not think a market could be always depended upon for their produce. They are good layers, but their eggs are small. We are by no means sure they will do as well in confinement as Spanish, Cochins, or Brahmas. These are always good layers, and will bear any confinement. Mr. Bailey speaks of the house being only six feet square, but the birds had a wired space in front. We should call a space fifteen, or even twelve feet by ten, large enough for either of these breeds. It can easily be provided with gravel and with sods of grass. Eggs must be the principal source of profit, and the sale of live birds the next. Cochins and Brahmas are indifferent table fowls; and Spanish are objected to on account of their black legs.

BANTAMS AT THE BIRMINGHAM SHOW.—In your account of prizetakers at the late Birmingham Poultry Show, the class for Game Bantams is entirely omitted. I shall feel obliged by your inserting them in the next Number.

Game Bantams (Black Red).—First and Second Prize, W. R. Lane, Birmingham.

Duckwings.—First and Silver Plate, R. Hawksley, jun., Southwell. Second, Mrs. R. Hawksley, Southwell.

Game Bantam Cocks.—First, Mr. H. Shield, Northampton. Second, Mr. R. Hawksley, jun., Southwell.

If you examine No. 636 of THE COTTAGE GARDENER, you will see the omission. No. 637 has got the Commendations in all right. Your attention will oblige.—R. HAWKSLEY, JUN.

WEEKLY CALENDAR.

| Day of M'nth | Day of Week. | JANUARY 1—7, 1861. | WEATHER NEAR LONDON IN 1860. | | | | Sun Rises. | Sun Sets. | Moon Rises and Sets. | Moon's Age. | Clock before Sun. | Day of Year. |
|--------------------|--------------------|------------------------------|------------------------------|-----------|-------|--------------------|---------------|--------------|----------------------------|----------------|-------------------------|-----------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | |
| | | | | deg. deg. | | | m. h. | m. h. | m. h. | | m. s. | |
| 1 | Tu | CIRCUMCISION. | 29.661—29.473 | 56—43 | S.W. | ·08 | 8 af 8 | iv | 53 af 9 | 20 | 3 58 | 1 |
| 2 | W | Erica carnea. | 29.689—29.671 | 56—52 | S.W. | ·04 | 8 8 | 0 af 4 | 15 11 | 21 | 4 26 | 2 |
| 3 | Th | Rhododendron dauricum. | 29.305—28.861 | 57—42 | S.W. | ·07 | 8 8 | 2 4 | morn | 22 | 4 54 | 3 |
| 4 | F | Winter Aconite. | 28.902—28.872 | 50—29 | S.W. | ·03 | 8 8 | 3 4 | 38 0 | 23 | 5 22 | 4 |
| 5 | S | Scotch Crocus. | 28.811—28.755 | 43—36 | S.W. | ·11 | 8 8 | 4 4 | 4 2 | 24 | 5 48 | 5 |
| 6 | SUN | 2 SUNDAY AFTER CHR. EPIPHANY | 29.831—29.175 | 42—25 | N. | — | 7 8 | 5 4 | 28 3 | 25 | 6 15 | 6 |
| 7 | M | Hepatica. [Twelfth day.] | 30.212—30.099 | 43—28 | W. | ·02 | 7 8 | 6 4 | 49 4 | 26 | 6 41 | 7 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 42.1° and 30.7° respectively. The greatest heat, 54°, occurred on the 7th, in 1845; and the lowest cold, 4°, on the 2nd, in 1854. During the period 139 days were fine, and on 92 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

Cauliflower, if the autumn sowing failed it is advisable to sow in a box, to be placed in heat, and when the plants are of sufficient size to be pricked out in a frame or a slight hotbed. *Celery*, dig out trenches that they may receive the benefit of frost. Cauliflowers to be planted in them in the spring, with dwarf Peas or Lettuces on the ridges between, which will be off by the time the trenches are wanted for Celery. *Mushrooms*, the beds out of doors will require to be carefully covered with litter and mats. *Potatoes*, if new Potatoes are wanted early, plant Ashleaved Kidney, Early Frame, or any of its varieties on a slight hotbed. If it is not convenient to plant them immediately, they may be laid in any warm place until they begin to sprout. *Radishes*, sow on a slight hotbed if wanted early. *Sea-kale*, cover up for a succession. Look over the store roots and fruits, and remove all decomposing matter. If frosty wheel dung into the quarters, turn composts, and other such operations that may be done in such weather.

FLOWER GARDEN.

During the continuance of the present frosty weather but little can be done here; however, where alterations and improvements are contemplated—such as making new walks or new flower-beds—such operations may be carried on. Should the weather be too severe for out-of-door work the time may be usefully employed in making brooms, cutting labels, pegs, nicking and painting flower-sticks, or any other article that you know will be wanted at a more busy season of the year. *Rhododendrons* and other such American flowering shrubs, if not growing as freely as they ought, would be benefited by a liberal top dressing of rotten dung or leaf mould, covering it with a little fine soil, and working it into the ground around the ball near the extremities of the roots.

STOVE.

It is advisable to cover plant-houses with mats, or any other material suitable to protect them from very severe weather. All stove plants, except a few Orchids and some bulbs, should now be comparatively at rest. A temperature of 55° will be sufficiently high in sharp frosts. No more water to be given than will merely prevent them from flagging. Climbers in pots to receive attention in tying and stopping, so as to make them cover the whole of the wire trellis.

GREENHOUSE AND CONSERVATORY.

As the surface soil in pots soon gets exhausted by repeated waterings, and as repotting is not advisable in such weather, the only thing that can be done at present is to remove the soil from the surface of the pots, and after having loosened the next layer down to the roots with a pointed stick, to replace it with fresh compost, when the next watering will carry the more sandy parts down among the roots. Use no more fire heat than is indispensable, and be careful to counteract its drying effects by evaporating-pans or by sprinkling the borders, &c., to prevent

a parching state of the atmosphere. Get soil for potting purposes under cover and fit for use at any time that it may be wanted. Early-forced bulbous plants should now be introduced to take the place of the Chrysanthemums. These will make a gay appearance until the forced shrubs are in flower. Watch for the appearance of green fly, and as soon as observed smoke the house with tobacco. Spare and dirty pots to be washed, and crocks to be broken and sorted.

PITS AND FRAMES.

Plants in these structures, if not heated, will sustain no injury in frosty weather if they are covered for weeks together; and even if the plants become frozen it will be better that they should remain covered, and be allowed to thaw gradually than that they should be suddenly exposed to a heated atmosphere. If the plants are in a comparatively dormant state they will not sustain injury if light is excluded for a time. Plants that have been excluded from the light and air, if only for a few days, must not be too suddenly but very gradually inured to free exposure. Advantage to be taken of mild days to give air freely; but cold draughts to be avoided at all times. If any dampness is observed amongst the plants work them over, and remove all dead leaves, moss, and all litter apt to cause damp. Give water very sparingly. Plants in windows keep from frost, and do not allow them to draw by close confinement in a warm room; wash leaves, to remove filth; water sparingly, and in the morning, use tepid water. Cactus and such succulent plants scarcely require any.

W. KEANE.

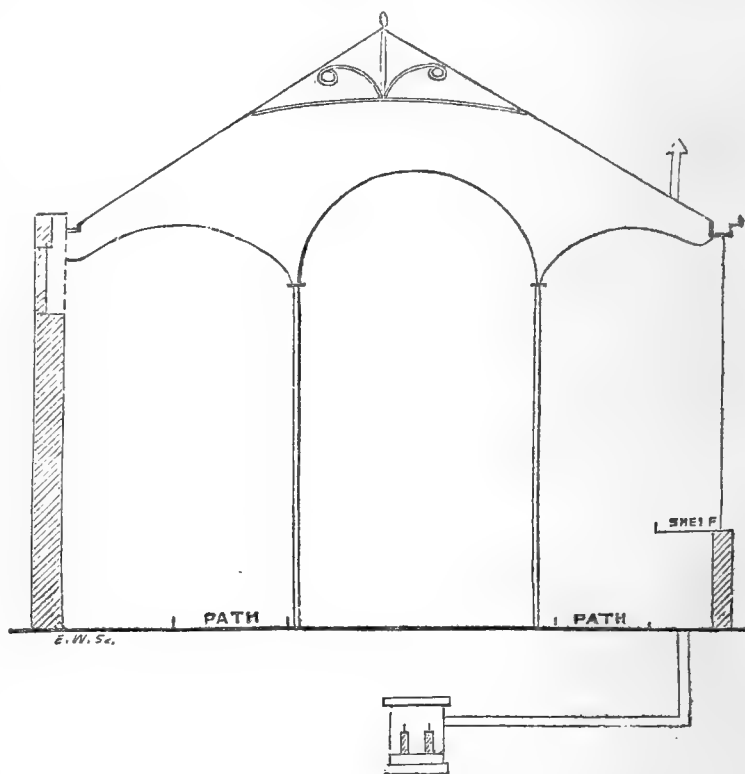
DOINGS OF THE LAST WEEK.

I AM not so sanguine on this point as our "KILMARNOCK SUBSCRIBER," nor yet do I fully agree in the value put upon it by our worthy conductors, and yet I think there may be some good derived from it. I fear if commoner people will not be satisfied with what is done in a conservatory and a greenhouse, but will wish the same tale to be applied to other portions of gardening. Some years ago, I could have done the whole matter more justice, but for reasons which I need not mention, gardening is not now carried on to the same extent—in other words, we are getting too economical to furnish in our weekly operations a fair criterion of what others should do where there is every encouragement given, and mere moderate expense no object. I think, however, that a few notes may not be unacceptable; for in all departments this last week has been a very trying one, and more especially in one department here—the conservatory or greenhouse, owing to the boiler giving way.

This day week was much the same as respects weather as we had experienced for some time past—moist and dull, with little or no sun. Air was, therefore, given all day to pits and frames containing bedding plants, &c., and left on all night when likely to be mild. By propping up the sashes back and front there was a free circulation, and no dew or rain could get in. If the day was sunny for a few hours the sashes were all pulled back, so that the sun should dry and harden the tiny things. Opportunity was also taken to pick off any damped or decayed leaf, and a dusting of equal parts of lime, dry, rough sand, and dusty charcoal was thrown among them to render the surface dry, and

prevent damp and fungus. Salads, Cauliflower plants, &c., just received less attention. Most of these got, when necessary, a little protection without glass. On Monday night the stars got clear, and the lights were all shut close, and the tenderest things protected with mats or straw hurdles. Anticipating what was to come, a nice piece of Snow's Broccoli, just beginning to form their heads, had the base of the plants all along the rows well covered up with litter, leaving the tops of the plants out. Tuesday morning gave us some 7° below the freezing-point, but nothing was injured. Tuesday afternoon gave every appearance of the frost continuing, and, therefore, the Broccoli had a little rough hay shaken over them along the rows. Celery had stubble shaken along the rows and spruce fir boughs laid over it; and all the cold pits were covered securely early in the afternoon. On Wednesday, all the plants in the houses were examined, watering only those that were dry, and not spilling a drop that could be avoided. These houses being also used for fruit, no more heat was given than was necessary to keep out frost. On the Monday and every other day previously when mild a little fire had been given to cause the air to circulate freely, and prevent the tendency of young cuttings to damp. The frost now seeming to set in, the houses were examined early in the morning, and no fire given if there was enough heat to keep all safe. The houses thus being cool during the day, little or no air was necessary, unless the sun was very hot, which it has not been above a few hours during the week. We prefer in cold weather coolness during the day in preference to letting in too much cold air. Strawberries in pots, &c., were now protected. On Thursday, Friday, and Saturday, we filled the ice-house, doing nothing in the garden but keeping all right, and wheeling manure, &c., the ground being like flint. A couple of inches of snow helped us much in the way of protection. Having ascertained that the plants in cold pits had a temperature of from 33° to 35° , they have never been uncovered nor had air since Wednesday. Being short of protecting material, I only wished the snow had come deeper. From Wednesday to Monday the thermometer has ranged from 6° to 16° below the freezing-point at night, when placed against a wall five feet from the ground, and much lower in the open ground. On Friday, Saturday, and Sunday nights, a little fresh litter was thrown over the pits and frames, or what was there broken and turned with the fork on the surface to keep it loose, and to compel the frost to begin its radiating of heat afresh. On Tuesday or Wednesday, I forget which, the boiler that heated the conservatory gave way, it was wrought iron and had done good work for about twenty years. My employer wished to have one from the same firm that put up the other one, and I found that though I sent specific directions, I had a man to look at it on Sunday, and I suppose I shall consider myself lucky if I get one in a week or a fortnight. If I had been nearer London I should soon have settled the matter. On examining the boiler I found I could put my fingers through it, so doing anything with that was out of the question. I might have made a furnace of it, and tried to get some heated air in the pipes instead of water; but the holes and the mode of setting the pipes told me I should fill the house with smoke. There was a short flue in the back wall; and taking out the iron opening for cleaning, we put a fire in the flue, leaving a small opening for draught. We found, however, that this would do little to keep out such a frost. I should at once have covered the house with tarpaulin, &c., but then I had nothing of the sort, and nothing except some pieces of thin Nottingham netting, except what were in use. I then recollected seeing an old iron stove that had been standing unused for a number of years. This was got hold of, but it had only a nozzle for smoke-pipe six inches long; but a pipe that would fit six feet long was found, and therefore we resolved to use it directly. The stove is parallelogram-square-shaped, 18 inches in the square, and 33 inches high. We placed the stove in the middle of the house, and so that by cutting a square of glass in the front we should get the end of the pipe a foot or eight inches beyond the glass. There was a double top to the stove. The first went inside, and all round and on the top. We covered this with sand to prevent the smoke coming out, and then placed the top on it, which laps over an inch. From being so long unused we found the smoke came out at the four joints up the four sides, and *inconsiderately* we daubed them up with putty, which stopped the smoke, but gave us a nasty smell in the house for a day afterwards. We did the joints afterwards with white lead, and since then a person would hardly know there was a stove in the house. I was aware that a long horizontal pipe from these

stoves was objectionable; for we could not get it to draw well, until, by finding some old tin pipes and a short elbow we were able to give the pipe an elevated termination. Then it burned well, and enabled us to keep the house not lower than 35° . Next day we procured some plate-iron pipes, and, altering the position of the stove, we kept the six-foot cast-metal pipe about eighteen inches from the front of the house; and then an upright pipe, fully ten feet long inside the house, and going through a square of glass, rose about eighteen inches outside, and had a cowl to fit on these to prevent the rains falling in. These pipes are about three inches and a half in diameter. This morning the thermometer was 18° below the freezing-point, and the house was half a degree above freezing. To give an idea of the power of these stoves, and that Mr. Rivers has not said a word too much in their favour when placed inside the house, I may mention that the house is 55 feet long, 20 feet wide, half span; centre ridge 20 feet from the ground; back wall inside 12 feet, with ventilators in the wall; front wall 2 feet 9 inches; glass front above nearly 10 feet; and that, with the exception of the wall at back and front and the doorways, the whole of the rest is iron and glass. I subjoin a section of the house showing



where the pipe goes through the roof, and also of the stove. In the latter we have burned coal and coke. The opening for putting in the fuel is very small. A metal drawer acts as the ash-pit and fits pretty close, above which are small openings as ventilators. The weather being so severe we could not clean it out, except once in the forenoon or middle of the day; allowing the fuel to burn out previously, and then pouring in a quart or two of water, and in half an hour or so afterwards picking out the clinkers with a wire and the hand.

In using for such stoves fuel that would clinker at all, it would be a great improvement if they could be made with a swing grate, as described by Mr. Allen the other week; and then, by having a larger opening for the ash-pit, though made to fit close, the clinkers could be removed at once. Of course, if such stoves were used often fuel could also be used that would burn and leave no clinker. Whilst on my mind, I may also state that I and others would be obliged to Mr. Allen to give the address of his friend who designed and made the small boiler, and also the price, with everything suitable to fix it. I think the smallest retort boiler costs about two guineas, and the smallest tubular about the same. If there is room to give the sections, it will be seen that the small stove has no division like that shown page 120, nor a break like that shown page 121. With two such stoves I believe that such a barn of a house might be kept safe; and though the trouble should be greater in attendance, the expense for fuel would be much less than for fuel either for flue or boiler.

CHRISTMAS MID-DAY.

A stinging night and no mistake. Thermometer last night down to 12° . Tried to throw some straw on roof of conser-

vatory, and also some snow; but the roof being steep they would not stick, unless where the netting put on previously was a little puckered. This morning glass against walls down to 10°, 8°, and 9°, and on ground near zero; temperature in ends of conservatory 30°, or 2° below freezing. Plants had been removed from ends. Cinerarias, &c., a little stiff, being kept shaded and sprinkled with cold water over the leaves, have recovered and show no sign of harm. After breakfast, there being no appearance of a cloud, threw four trusses of straw and a little hay over the whole of the back of the roof and ends of roof, which we hope will keep us safe to-night. Have looked out for a charcoal-stand if it should be necessary. Getting a little cloudy, and barometer falling.

R. F.

THE ROYAL HORTICULTURAL SOCIETY.

THE Queen having granted her permission that the Horticultural Society of London shall in future be styled the ROYAL HORTICULTURAL SOCIETY, it will henceforth be designated under that title, and the Fellows will adopt the abbreviation F.R.H.S.

WINTERING BEDDING PLANTS.

FROM the first appearance of THE COTTAGE GARDENER to this day we have all of us insisted on keeping bedding and other frame half-hardy plants as cool as possible during hard winters, and exposed the fallacy of making use of sun heat to help to keep frost out of cold pits, as is done in summer afternoons by shutting up long before the sun is off the glass. It is one of the best points of our gardening in England that we can thus force plants with the help of Nature; and it is the greatest harm to our calling that we, or some of us, do not better understand the difference, the vast difference, between the sleeping beauty and the maid-of-all-works in gardening.

From the first impulse of the spring to the safety-point of housing bedding plants in the autumn, Nature is the maid-of-all-works; and the more she is aided the more work is done, or the sooner the work is ended, and she may go earlier to bed; and no matter to which or to whom you compare Nature at her work, she ought to be considered the sleeping beauty, and to be treated as such after going to rest for the day or for the season. But as Nature under pot culture never sleeps, her rest is induced by a very different process to that of the sleeping beauties under bed-curtains. Cold sheets, cold toes, cold rooms, cold draughts, so chill and benumb the blood of mortals that they can hardly go to sleep the fore part of the night, or if they do they do not enjoy it. But all these degrees and ways of cold seem absolutely necessary to set plants to rest, and to rest them comfortably for a season. Those, therefore, who do not rest their bedding plants on that principle do it on a principle which is altogether wrong, and contrary to Nature. And the reason of hearing so much of harm in cold pits by frost and damp weather is just the want of Nature's rest for plants, and Nature's rest for plants is simply COLD all the world over.

In all parts of the world the night is colder than the day, and there is a daily—or, if you like it better, a nightly rest for plants. There are also a warmer and a colder season everywhere, and it is in the cold season that all the more useful and more beautiful plants take their yearly rest. It is difficult, however, to cause Nature to rest in bedding plants during a muggy, moist autumn, such as the last we have gone through. There was no real rest till the frost came on a week before Christmas, and in many of the cold pits all over the country plants were in a very bad condition then to go suddenly to rest; and those who made and may make use of bright sunshine in hard frosty weather to help to keep off the frost will be most severely punished in the long run if this winter holds on hard a long time.

Some people will lose plants from the sheer want of means of saving them from frost after all their good treatment;

but the great bulk of the loss of this winter will be from the soft state of the plants just before the frost, from the damp state of the bottom and sides of pits and frames, and the quantity of wet soil in the pots. Now, the effect of an hour or two's sun on all this damp at this season of the year is to raise a strong degree of vapour, which, being confined and covered up in the afternoon, would be sufficient to begin forcing a Peach-house with; or say the very worst possible effect on softwooded plants. The moment the sun touches the glass of a cold pit in frosty weather air should be on top and bottom, if ever so little, and the sun should be entirely off the glass before the air is shut off, no matter how cold the day may be. It is far better for soft plants to leave the glass wholly covered for days together in sunny weather during a hard frost than to raise that vapour inside a frame, and not allow it or rather force it off instantly. With the exception of real practitioners it is difficult to make people believe all this, for the mass of mankind do not and cannot see the immediate risk or any danger at present, nor signs of any such misfortune as is implied in these strict rules. Not one in a thousand could see the harm of the October frost of 1859 on the Peach trees and other border out-of-door plants at that period, and yet more harm was then done than has been recorded for any period in our gardening history. But real practice has more effect on the public mind than the actual preaching up of a theory, be it ever so sound: therefore, just hear that I practise what I preach about sleeping beauties and about my own beauties at rest.

I have over three thousand beautiful new seedlings in one cold pit without any artificial heat, and every one of them is as susceptible of frost as any cold-frame plants can be, and some of them a great deal more so. The pit is seventeen lights long in one division, the back is nine-inch brickwork, the two ends mounds of earth against one-inch deal, and the whole length of the front is only of that material—or say, the front and ends of pitch-pine deal one inch thick; but there is a dry lining in front six inches through. The glass has a good slope, and is covered with four folds of mats, and as much stuff over them as keeps off any frost.

Now, after the miles of cold pits which I have reported on in the nurseries round London, and in the propagating-grounds of the Crystal Palace, where all kinds and degrees of greenhouse plants, and any young seedlings are kept every winter with, in most of the nurseries, only one thickness of mat over the glass, and over that, fern, straw, or stubble, it seems as rich as a Christmas pudding to talk of four mats over my glass before aught else is added; but all my plants are pets, and more also; for most of them are for experiments, which if I lost at my time of life, would be far different from a loss of trade or trade plants, or common plants for ordinary flower-bed arrangements. Hence the depth of my feelings for them and the depth of mats over them; hence, also, the bare truth pitched on the side of practice, to make it square with my story about resting plants on a scientific basis. Besides, the said pit is exposed to the full view of the public every day in the year, and several hundreds see it with interest and stare at my doings every week the year round. During the slight early frost in October, I closed this pit for two nights only, and then expecting a run of mild weather, I fixed as a rule that abundance of air should be left on every night, and that the lights should be off or all but off the whole day if it did not rain, till the glass fell to 30°. That rule applied down to the week before Christmas; then the first frost was 10° of cold, or the thermometer was down to 22° on the scale, and some of the leaves got stiff with the frost after having two mats thick over the glass, but nothing to hurt; and I opened the lights wide while the sun was out, and in the afternoon I allowed the glass to get a little frosted before I put on the mats, which were also frozen a little.

The second change I had 14° of frost, the "glass"

being down to 18°, and put four mats thick on. Then 12° of frost, and on the sixth night I put a deep covering of dry materials over the mats; and as long as the frost will last, even if should be for six weeks, I shall not open this pit nor let the sun shine on the glass; but I am not yet sufficiently covered to hold out against a down-to-zero frost, and I shall add more to the covering or not according as the glass tells the fall of the temperature. After all that covering my glass is frosted just as on the first afternoon; the mats are also stiff, and all the materials over them are stiffish also, and the air round my pits cannot be much over 30° all this time; but I have no glass inside to tell how it is, and I am always afraid to trust to common thermometers that way, instead of the eye and the feel of a friendly hand among the leaves.

Now, these plants are, at last, sent to rest entirely by cold, the most natural method of inducing entire rest. The pit is quite dry, and the longer I can keep them at rest the better for them and the easier for me. I shall keep them in the dark as long as the frost continues, and shall not open the glass till four days of thaw have passed, and then shall not open the glass till the first cloudy day, when I shall admit air very freely. When my Punch Geranium was young, many years back, that was just how I used to keep 5000 plants of it every winter, and I know of no better method for all kinds of frame plants. There is not a shade of difference between my present plan and that which I practised twenty years since; and I am convinced that the nearest way the plan can be imitated, the safer the plants will get through a long winter.

There is one other move, however, which helps me greatly—I never water any such plants the whole winter. They had not had a drop from the end of last September, and I hope it will reach to the end of next March ere they need watering. The saving of time in looking after the watering of so many thousand plants, for five months at least, must be considerable. The yearly run with the 5000 Punches at Shrubland Park was just six months without a single drop of water; but then they were not in pots—another considerable saving, only planted out in rows across the pit, then thoroughly watered to settle down the soil, after that the glass off every fine day, and air on at nights till the frost put a stop to it. By that means the surface of the bed got sufficiently dry to hold on without causing damp, while the bottom was moist enough for the requirements of the roots.

My present plan is a little improvement on that. The plants are all out of pots, and are put in as thick as they can be placed in rows across the pit; each row is watered as soon as it is planted, and then an inch of dust-dry cocoa-nut refuse is put all over the surface, and in between the plants; but fine leaf mould, from under cover, would do just as well, or the fine siftings from old spent tan, or very dry sawdust. But I believe a better thing than any of these would be half an inch thick of sifted peat earth, which was as dry as Scotch snuff at the time of planting, and I also believe that any kind of bedding plant would keep easier that way, and at one-half the cost of time and trouble of looking after them, than by having them in pots, and with hot-water pipes. Hundreds of thousands of little Heaths, and others just as tender, and not over three inches in length, are kept in the London nurseries with only one mat to keep the glass clean, the rest of the covering being straw or stubble. But these being in very small pots must have occasional waterings, which doubles the expense over the plan of not watering at all; also, doubles the risk of moulding or damping off.

The great error and the greatest danger are in the fidgety ways of amateurs, who fear their plants are done for if they escape being uncovered for three consecutive days at a time. I think nothing of having my pets three weeks at a stretch as dark as the thickest covering can keep them. But where everything is wet or damp inside, and the alternate chills and vapours which are caused by

every blink of the sun being used to keep up the heat, render the plants so excitable, and so liable to the least cause of injury, that the wonder is how many of them escape a sharp winter.

At the time of taking up the bedders, and of thus planting out the old and young stock, I cut off almost every leaf, and never cut a top from a young plant for fear the wound should fester. But when old plants, or young ones that are strong and healthy, are potted for wintering by artificial heat, the best plan is to cut the old ones well down, and to take off a little of the top of all the young ones; unless, indeed, these should be wanted for cuttings next February and March. There, then, is the essence of our best practice for the last twenty years.

The present Christmas frost has laid the necessary foundation for comparing notes; and at such a time, under present circumstances, a tale of this drift is not so likely to get in at one ear and out at the other, as is sometimes the case with our most earnest precepts. The most telling thing in favour of my tale is this—that for the last twenty years I do not remember to have ever seen an insect of the fly kinds affect any one plant that was thus wintered without a pot or hand-watering.

With all my plants I never have an insect among them. I had a beautiful fumigator given to me as a present; but never expecting to need a cloud or a puff from it, I gave it away to a learned author in London, to kill the moths of the libraries he was then consulting, and he did kill them to some purpose, and brought to life that valuable record of things which the moths would otherwise have devoured. Another man, or firm of men, sent me a canister of some tremendous stuff to kill all manner of insects; but insects do not trouble me, and I had no means of testing the proof of the thing. One year about the end of April, after a very mild winter, that I could not possibly get my Verbenas all to rest, I recollect seeing some fly on the top shoots of some of them, but having quietly stopped all my Verbenas that week, as if on purpose to get them bushy, I took flies and all, and never saw one on any of my plants since, which I attribute to the economical and safe mode of wintering my stock.

My indoor glass culture, or wintering of plants, is nothing different from the great bulk of other gardeners of long practice, only my conservatory is so small that I am obliged to have it warmer at bedtime on hard frosty nights than is good for the plants, to save me getting up by four or five o'clock in the morning to stir up the fire. But to make amends for that, I believe I keep my plants very much drier than regular gardeners; and to tell the truth, I constantly keep breaking all the laws and commandments on that head, for my house is constantly much cooler during the day than it is at night during the whole of the winter, and yet my plants do pretty well.

D. BEATON.

MUSHROOM CULTURE.

As Mushrooms are a delicacy most people are fond of, although not so universally grown, I think, as they would be were their culture known to be so simple that any one possessing the convenience of an outhouse or cellar, with a temperature of from 48° to 55° and a little short dung, may grow them, I beg to offer a few remarks to those who may not yet have attempted their culture as to the way they may be produced in abundance with a very little care.

In the first place, if short dung fresh from the stables is to be had so much the better; but I have grown abundance on beds made of short dung three months old. However, let it be which it may, procure as much as will make a bed sixteen inches deep and any required size, throw the same together for a few days to heat and dispel the greater part of the moisture, then throw it down for a day or two to cool and dry, after which again throw it up together for a few days—generally about five or six will be found sufficient. It will then be fit to make the bed with, which, let the size be what it may, should be about sixteen

inches deep. In making the bed, take care to tread or beat it firm. As soon as the bed shall have risen and declined to 75° it is ready to spawn. I find Cutbush's Milltrack to be the best spawn I can procure. Half a bushel will spawn a bed ten feet square. This broken in pieces the size of small Apples, placed just in the dung and covered two inches deep, in any garden soil well beaten down, will produce abundance of Mushrooms in six or seven weeks, in a temperature of from 50° to 55°.

A bed thus treated, 12 feet by 7, spawned with half a bushel of spawn obtained from Messrs. Cutbush, of Highgate, has produced me above 80 lbs. weight of Mushrooms of first-rate quality, many not thoroughly open weighing four ounces each. The bed is now in full bearing, and has been since the 7th of October, and likely to produce at least half as many more with no further care than above enumerated, with the exception of an occasional watering when dry.—W. YOUNG, *Gardener to R. Barclay, Esq., West Hill House, Highgate.*

PAMPAS GRASS.

A PLANT of this Grass of the large-leaved sort has this year produced only eighteen flower-stems. They are eleven feet high and are in a fine state. This plant stands in the centre of a grass plat, having an excellent situation, and abundance of room for its roots to extend, is in good soil, and was lightly manured. The stems are upright, stiff, and formal. Another plant of the small-leaved variety has eighty-two flower-stems. The tallest flower-stem is nine feet high. The plant is a perfect picture, and the leaves stand only five feet high, turning over in the most graceful manner. The stems spring off in a very easy and effective manner. Some are only six feet high. This plant is in a very rich soil, had a great deal of the strongest manure and horse water last winter, and I think the result shows that a recent writer is wrong in recommending it as a plant that should not be strongly manured. It is to the absence of strong stimulating manures that I have attributed the indifferent specimens which may be seen at Kew and elsewhere. They flower well once, and then, generally, badly afterwards. My plants are several years old, and were very handsome in 1858-59. The tall-growing male plant is less suitable than the smaller-growing female plant for gardens. The former has a coarse, rigid look; the latter is less liable to injury from high winds, and is far more graceful in its habit. The flowers are different, but to my taste the female is the prettier of the two.—BELLIRIUM, *Hoyle, Cornwall.*

THE CONSTRUCTION OF ORCHARD-HOUSES.

MR. PEARSON'S remarks on these structures are in the proper spirit, and lead one to think of the best and cheapest mode of erecting them. The question cannot be too much agitated; for houses devoted to fruit-tree culture must, in the course of a very few years, have a great influence on the production of choice fruit, and make what for so many years was a luxury confined to the few almost a necessary to the many.

I must correct one or two errors into which Mr. Pearson has fallen. I did not commence with lean-to houses with a hedge for a back wall; these were an afterthought, built against some fine Beech hedges for the purpose of retarding the ripening of fruit, and of growing in them Apricots, Peach, and Nectarine trees for sale. I have five of them still in existence, and most convenient places they are. My first orchard-house was a lean-to, a fixed roof, with boards (covered with asphaltic felt) for walls, and ventilated front and back with sliding shutters. I remember feeling full of doubt about this mode of ventilation; for every vinery and greenhouse I had seen was built with the usual heavy rafters and sliding lights "to give air." This house, now about fifteen years old, was built with Larch poles for posts; for, was not the fixed roof an experiment, and might it not fail? So I reasoned. It has never failed, and the Larch posts having recently been cut off at their lower ends where they were decayed, and placed on a sill resting on brickwork, it is now in excellent condition. It was in this house that I commenced the orchard-house culture of Peaches and Nectarines by planting two rows of trees—one in the back border, and the other in the front, with a sunken path between them, suffering them to grow one season, and building the house over them in the autumn. They had then formed themselves by their summer's growth into nicely-shaped bushes; and I can now vividly recollect the

pleasure they gave me in spring when covered with their beautiful flowers—every petal perfect, owing to the favourable climate of this my first glass-roofed shed. Let me add my firm hope that many a humble gardener, poor in pocket but rich in (gardening) spirit, will yet derive equal satisfaction from a humble lean-to house, "horridly ugly," as our friend Pearson thinks such a structure.

I am well acquainted with his passion for "brickwork laid in Portland cement;" he is in the same category as the "hothouse builders," who seem to think that no glazed structure can be perfect without brickwork, heavy rafters, and sliding sashes. Like them, Mr. Pearson must have imbibed his love for them (as far as brickwork goes) with his mother's milk; a large portion of the brain region of most of our hothouse builders must be occupied with brickwork, so necessary do they think it to the well-building of a glazed structure. No one can admire more than I do the beautiful houses erected by our first-class hothouse builders—they are in many instances an ornament to the country; but I wish to wean them from the idea that sliding sashes and strong brickwork are *always necessary*; far from it. We shall in a very short time see men shaking off the trammels of "old times," and building orchard-houses light, cheap, and durable, without my friend Pearson's dearly-loved brickwork and Portland cement.

My present idea is, that for a large orchard-house there is no form comparable to the single span with a fixed roof and large glass, 20 inches square or so. A house of this kind from 20 feet to 30 feet wide, the roof supported by light iron pillars, and its sides by posts either of wood or iron, without any brickwork, will be ultimately the house for all large gardens. The unbroken roof—for there is no occasion for any roof ventilation—and the large space inside is so grateful, for in most glass houses there is a sense of confinement not at all agreeable. The most startling point to all hothouse builders is the absence of roof ventilation; for in a house of this kind there is one large unbroken glass surface without slides, pullies, ridges, furrows, or any other expensive paraphernalia. All the ventilation is what for the future we may call lateral—viz., for a house 20 feet to 25 feet wide a shutter on hinges, or sashes on pivots, on each side, 18 inches deep, 2 feet from the surface of the ground; for a house 30 feet wide the same kind of ventilators on each side a little larger—say 2 feet in depth and 18 inches from the surface. These openings in hot weather admit two large lateral streams of cool air, which, as far as I have at present observed, meet nearly in the centre of my twenty-four-feet-wide house; rarefaction takes place rapidly, the two currents of air unite, form a large body of heated air, which ascends to the top of the house, and finds egress by the aperture left at each end under the apex of the roof. This method of ventilation, although so simple, is quite perfect.

The contrast of these large single span-roofed houses with ridge-and-furrow houses is great, so dim and dull are the latter in comparison. When very large spaces of ground are to be covered with glass—as with the Crystal Palace and the large conservatory at Chatsworth—ridge-and-furrow houses are necessary; but for fruit growing, and agreeable houses to be used as sanatoriums, they are expensive—far beyond the single span-roof—and unsightly; those who have been tempted to build them for fruit growing will in a few years feel surprised that they could even have been tempted by the fashion of imitation to have thus committed themselves.

My *beauideal* of an orchard-house—to be used not only for fruit growing, but as a sanatorium and charming promenade in spring, autumn, and winter—is a single span-roof house, glazed with glass 20 inches square, 30 feet wide, 13 feet high, and from 100 feet to 500 feet long, its roof supported inside by light iron pillars, its sides by light posts, either of wood or iron, ventilated laterally either by a shutter on hinges, glazed, or by sashes on pivots. Instead of boards below the ventilating shutter or sashes I would have slabs of 32-oz. glass, and in like manner glass at each end "from head to foot"—not a brick to be seen. A house built after this manner would be lighter than the day, and make the owner of it forget that bricks, Portland cement, huge "principals" for rafters, pullies, and sliding lights, ever could be thought of in building a house intended for enjoyment. In damp, hot vaults, intended to grow orchideous plants in, and to kill the growers, such things are, I suppose, necessary; but our climate requires no moisture to be added to it—quite the contrary. We lack dryness and warmth, and with the former in taking exercise it is surprising how little we require of the latter. A long promenade

would, in my opinion, be more agreeable than a square piece of ground covered with a ridge-and-furrow roof. A single span-roofed house 30 feet wide might, therefore, be 1000 feet long, if thought necessary, for a promenade-house. And when one can confidently state that a house 24 feet wide and 1000 feet long can be built for £1500, and one of the same length and 30 feet wide for a small advance on that sum, one feels surprise that such houses are not attached to hotels in some of our health-seeking towns in the west and south of England; they will ere long be mentioned in the "taking" advertisement of such places, and if properly managed will conduce largely to the recovery and comfort of those not blessed with health, and who are obliged to leave their homes for change of air.—THOS. RIVERS.

HEATING A PROPAGATING-HOUSE.

I WISH to put up a small propagating-house about 12 feet by 7 feet. Will an aspect due east do, which I have chosen because I can heat it from the greenhouse boiler? Which is best to have the pit, against the front or back wall? and which do you prefer, a wooden or brick tank, both lined with cement? I thought to let the flow pass through the tank and return by a three-inch pipe through the house for top heat. Will a tap on the flow completely shut off heat? How high should the pit be above covering of the tank?—DORSET SUBSCRIBER.

[If you have only one bed in your house it will matter little whether you have it at the front or the back; only at the back you will require to be more careful with shading in the early morning, as it faces the east: therefore, on this account for mere propagating, we would prefer the bed being in the front. You, like another correspondent to-day, give us no account of the height of your house back or front, though that is even more important than the mere length and width; but this we can say, for a common pit without being able to get into the house comfortably at all, the means of heating will not suffice, if you resolve to begin propagating before April and May. For early work—say February, you would need double the pipes you propose, and in that case it would be as well to have the means of giving top and bottom heat independently of each other. If economy is your object, you could do this either without a tank or without pipes for bottom heat after they entered the tank by modes frequently referred to. We have no objection to the pipes passing through the tank, however, except on the score of expense. A tank divided into two, as a flow and return, would just be as effective; and if the pipes go through a tank the water will be no warmer than the pipes make it, and will be little better as a reservoir than nine inches of open rubble about and above the pipes. We have no preference for wood *versus* brick tanks, only we think wooden ones if well made are less liable to break, and if well hammered at the corners and joints, and a little red lead put there afterwards inside, and no paint given outside or inside, there is no end to their lasting, if made of red deal well seasoned, and well supplied with water afterwards. Such a tank would need no cementing or any thing else inside, and from three inches and a half to four inches deep would be enough for your purpose. You would require a framework all round it from six to nine inches or more deep according to the depth of the pots you meant to put over it, and that might be in sweet tan or pure sand. Another advantage of wood *versus* bricks would be, that by means of stout bearers you could place your tank at the required height at once.

Of course, a brick tank would require to be carefully cemented, and we have not a word to say against those who like them. How, then, would you manage such a house? Well, looking to convenience, we would have a pathway 26 inches or 28 inches wide down the middle, and if we had much propagating to do we would have a bed on each side from 35 inches to 36 inches wide each, and rounding at the further end. We would take two three-inch pipes round underneath that bed, if we wished to propagate in January and February, and one four-inch pipe if we commenced in April. We would also have two three-inch pipes for top heat. If we wished that place to grow a few young plants as well as to propagate, then we would have the propagating-bed in front, and a bed for setting fresh-potted plants in behind, and in that case the bottom heat would be confined to the front bed; so that the water, either in tank or pipes, would just go round, and the top heat would do the same. Under such an arrangement if the place was always to be used, the two pipes for top heat might proceed at once from the boiler

and return beneath; but for the small extra expense, it is best to have top and bottom independent of each other. Perhaps the simplest plan of all would be to have two beds as proposed, take two four-inch pipes as much as possible round the house underneath the two beds, surround the pipes with open clinkers, &c., and have openings with slides in the pathway-wall, by closing or opening which you could let out heat into the atmosphere at pleasure.]

THE TEMPERATURE DURING THE NIGHT OF DECEMBER 24TH.

I HEREWITH enclose a copy of the late severe frost, taken hourly by myself on the 24th and 25th of this month, and shall be glad to hear of the extremes from other quarters.—JOHN PERKINS, *the Gardens, Thornham Hall, Eye.*

| Dec. 24th. | Therm. | Deg. of Frost | Dec. 25th. | Therm. | Deg. of Frost |
|------------|--------------|---------------|------------|--------------|---------------|
| 2 P.M. ... | 26 | 6 | 1 A.M. ... | 1 | 33 |
| 3 " " " " | 24 | 8 | 2 " " " " | 4 | 36 |
| 4 " " " " | 18 | 14 | 3 " " " " | 6 | 38 |
| 5 " " " " | 17 | 15 | 4 " " " " | 6 | 38½ |
| 6 " " " " | 16 | 16 | 5 " " " " | 5 | 39 |
| 7 " " " " | 8 | 24 | 6 " " " " | 6½ | 38½ |
| 8 " " " " | 6 | 26 | 7 " " " " | 4 | 36 |
| 9 " " " " | 6 | 26 | 8 " " " " | 5½ | 37½ |
| 10 " " " " | 5 | 27 | 9 " " " " | 4 above zero | 28 |
| 11 " " " " | 3 | 29 | 10 " " " " | 15 | 17 |
| 12 " " " " | 1 below zero | 33 | | | |

CULTURE OF NYMPHÆA CÆRULEA AND RUBRA.

"Please to give a few lines in your next Number on the cultivation of these in tanks, situated in vineries and stoves."—A. Z.

I DO not recollect seeing rubra, which is the tenderest of the two, do much good out of doors; but I recollect seeing *cœrulea* blooming in a common water-reservoir once in Scotland. Those roots that were sunk deep survived during the winter, but came very weak and miserable-looking the following season. Those left within nine inches of the surface of the water all perished. These were turned out in the small pans in which they were growing in a cool stove in the middle of June. One, if not both, of these have bloomed out of doors in summer in the south of England; and I understand that, owing to the mildness of the winter, they frequently pass the cold months uninjured, though not placed particularly deep in the water. These, and many other beautiful tender water plants, have bloomed in summer and autumn at Messrs. Weeks' establishment in a large reservoir out of doors, but the water heated by pipes from a boiler passing through it. In general circumstances, however, they do far best in houses regularly heated; and as they require the brightest of our weather to open their blooms nicely and diffuse their perfume, they will generally come strongest when allowed to rest in the dark months, and started into growth in March or April.

Under such circumstances we will make no allowance for risks. At the rest period a common vinery also at rest would be too cold for them. The roots, therefore, should be removed to a warmer place, taking the vessels in which they grow with them. The temperature when at rest should seldom be below 50°. The soil in the pans should not be dry, but there will be no necessity for water standing over it. The roots will keep nicely in a dryish mud, and may thus remain in any inconspicuous place, warm enough, from November, if beginning to fade, until March. The temperature, as already stated, should not be often below 50°, nor much above 55° with fire heat.

When it is desirable to start these into growth—say in March, turn the roots or tubers out of the soil, separate and divide them according to their size, placing from three to five good roots in a vessel—say fifteen or eighteen inches in diameter or square, and some seven or eight or more inches deep. Pack the roots, and cover them with rich loamy soil, with some pieces of charcoal, which will help to keep the water sweet. These vessels may be set to any depth in the tank, previously supplied with water to about 75°, and allowed to heat gradually 10° more. The vessels may have a covering of water at first of two or three inches deep, and as the plants grow they should be sunk a few inches deeper. If deemed more convenient a very little water over the soil would do at first.

As tanks are mentioned I have presumed they will be placed in them. If there is no other means of heating the tanks, warm water should be placed in them at once, and should be pure and soft. The plants will thrive all the better if there is a very small outlet at one corner, and a small flow-in at the corner farthest from the outflow; but the inflow must be warmed previously or directly afterwards. If there is not that convenience, a portion of water should be removed every day, and the place supplied with fresh heated water. From 80° to 85° would be none too much for the water.

Where there are no tanks, from two to three strong roots will do well in pans about fifteen inches diameter and seven inches deep. These might have a convenience at one corner like an earthenware milkdish, so as to pour off from a pint to a quart of water every day, and supply its place with as much warm water from 80° to 90° in exchange. In such houses as vineries such vessels might be set above the pipes, flues, or other heating medium. If there is no such convenience, the pans should be placed in the hottest end of a plant-stove. The plants would thrive well in a vinery under the above conditions so long as a moist atmosphere was kept up to insure growth, but whenever a drier atmosphere was necessary to ripen the Grapes the aquatics would not do quite so well. To give them the best chance the temperature can scarcely be too high, the atmosphere too moist, or the weather too bright. As a criterion, then, I would say, Water averaging from 75° to 85° and often renewed, and an atmosphere near saturation-with-moisture point, and a temperature at night from 65° to 75°, and in the day from 70° to 85° and 90°. Ten degrees less of heat will permit of very fair results being attained, but the above we would deem necessary for having very fine large flowers. It is now some years, however, since we have grown these great beauties, and that chiefly in pans without tanks; and if any of our able readers can point out a mode by which they can be more easily grown to perfection, they will confer a favour upon many besides ourselves and "A. Z."

When desirable to increase the stock all the smaller roots, or tuber-like roots, should be planted a little thicker in pans and grown by themselves. Some of the small ones may bloom, but not in general at all equal to a good, sound, fair-sized root. These smaller roots may occupy a less conspicuous place. A little shading may be required in the middle of very bright days.

R. FISH.

FRUIT TREES ON THEIR OWN ROOTS.

MR. BEATON asks in page 170, "Would it not be a point of some advantage to have all the kinds of stone fruit on their own roots for orchard-house culture?" Allow me to give my experience in answering this question to a certain extent. I happen to have here still growing and in a healthy, fruit-bearing state, although one of them has a hollow stem from old age, two Green Gage Plum trees planted by my grandfather about 1780. These are both on their own roots, as they put forth suckers, which I have preserved and planted out, and which are now bearing trees. Now, I also happen to have a Green Gage Plum tree grafted on the Sloe, now about fifteen years old, and I have felt some interest in comparing their fruit. I have found the fruit from the old trees generally finer than those on the Sloe-stock tree. A Washington Plum tree grafted on the Sloe is growing near this: it is not quite so vigorous as trees grafted on Plum stocks, but its fruit and leaves are equally large, but the fruit on the younger trees raised from the suckers of the old trees exactly alike, as to size and quality; and this accords with general experience, for the fruit of the Green Gage from old trees is always richer and larger than from young trees; so, in this instance, the trees being on their own roots seem to have given no advantage. I have had some experience with Peaches and Nectarines on their own roots in orchard-houses, and must candidly confess that I have as yet found no beneficial results; for I have found that shoots from seedling Peaches budded on the Plum or Almond stock have given finer fruit than the parent tree, and I have after some years of practice given up budding Peach trees on Peach stocks (stocks raised from Peach stones) because I found they were more liable to disease, and did not make such vigorous trees as those budded on Almond or Plum stocks. I have not yet tried Cherries, those of the Bigarreau tribe might be raised from layers. Some difficulties would be found in raising the Duke Cherries by the same process, owing to their rigid shoots. I am, however, inclined to doubt if any advantage would be gained by this mode of propagation, so as to have them

on their own roots; for I have a large number of seedling Cherries raised from the Florence, and I find a certain proportion of them to give out gum and to do badly. If shoots are taken from these and grafted on common Cherry stocks, they at once form healthy trees. It is the same also with other Cherries raised from the Duke and Morello tribes—some of these have from the first been of a weakly, scrubby habit. My remedy is to take off scions and have them grafted on the Mahaleb stock. I have then at once had healthy trees. In one or two instances, the parent trees have died from sheer weakness of habit, succumbing to gum and canker, but my grafted trees have saved me the mortification of losing a seedling variety; so that in these instances "fruit trees on their own roots" have given no advantages.

Striking cultivated Plums from cuttings of two-year-old shoots is new and very interesting; but if the "Torrington," mentioned by Mr. Beaton, is in Devonshire, the soft, moist climate of that county may have much to do with it. I have one patch of moist ground in which I have grown many thousands of Plums from cuttings, these were made one foot in length, two-year wood six inches, one-year wood six inches. The former being placed deeply in the ground. The sorts I propagated thus were the Black Damask and Brompton Plums for stocks, and the Nectarine, Gisborne's, and I think the Green Gage, out of curiosity. I found, however, that I gained no time by the latter experiment, commercially; for a Green Gage Plum grafted on a strong stock suffered to grow one summer and then potted was a bearing tree the third year, and so for the last seven years I have not practised cultivation of Plums by cuttings. Moreover, I found that, except in this moist patch of deep vegetable soil, they would not take root.

The method is, however, full of interest; for although I can make a fine dwarf Plum tree in one season by grafting, it will be interesting to the amateur to plant his cuttings in November, to prune them and train them for two or three years, and thus make his own trees; but I do not think they will be more prolific or give better fruit than grafted trees.

Mr. McKelvie's method of making Plum cuttings entirely of two-year wood spurred in, is, I think, quite new; and it is probable that on this deviation from the usual mode of making cuttings hangs success, so that they may succeed in soil not usually favourable to their well doing.

The two or three-year-old branch of a Burr Kent Apple will take root if planted; why should not some other kinds be tried? All these essays keep alive in the amateur the true gardening spirit.—T. R.

CONSTRUCTION OF A VINERY WITH A FORCING-PIT.

My grapery and forcing-house is 33 feet by 12 feet; back wall 12 feet high; front 4 feet high. A forcing-pit occupies the entire floor of house except a three-feet passage at back and sides, and one-foot passage in front. The Vines bore capital Grapes, when I ate them some six years ago, but have been neglected in every particular since. As the glass and frames are all bad and must be renewed, I wish to fit up the house in the best manner. The roots of the Vines are outside: would you recommend me to make my house 14 feet or 15 feet wide and to bring them inside? Is it necessary for the roof of a vinery to open, or will large ventilators in back wall do? Is it necessary for the Vines after bearing to be exposed to the air and frost, or is this exploded treatment now-a-days. Could you also roughly estimate how much coals would heat such a house and pit in the year, fitted up with a tank under the pit, and in some of the improved modes directed by THE COTTAGE GARDENER?—W. R. A.

[Before we could give anything approaching explicitness in details, we would have required more explicitness of object. For instance: First, as to *expense* of heating such a house, 33 feet by 12 feet, 12 feet at back, and 4 in front, that would not be much in ordinary circumstances where things were not wanted early. Keeping a temperature of 60° in May and in December are very different things, and then the seasons vary so much. I believe that this season I have burnt as much fuel from April to October as I have done in many seasons from November to March. The management, too, is to be considered. A careful stoker will do with much less fuel than a careless fellow whose sole idea is to make and keep a fire burning.

2. We know not how your house is heated; but if to be done

afresh, there would be no difficulty in having a tank below your forcing-bed, or, at least, two or three iron pipes according to what you wanted, and if not sure, it would be safest to have enough. See what is said to another correspondent about pipes and tanks.

3. The one-foot pathway in front must be inconvenient. If the pit was six feet wide, there might be three feet in front as well as back, and that would give room for walking, and heating medium, &c.

4. The present width of house would do very well, but if you widened the house you would also have to widen the path inside too; for if the present slope of the roof was continued, the space near the front, if widened three feet or so, would be so low that a person would have to stoop or crawl instead of walking.

5. If you raised the back wall a couple of feet, and also the front wall the same, the new wall to increase the width would give that room, and enable you to have a wider pit inside.

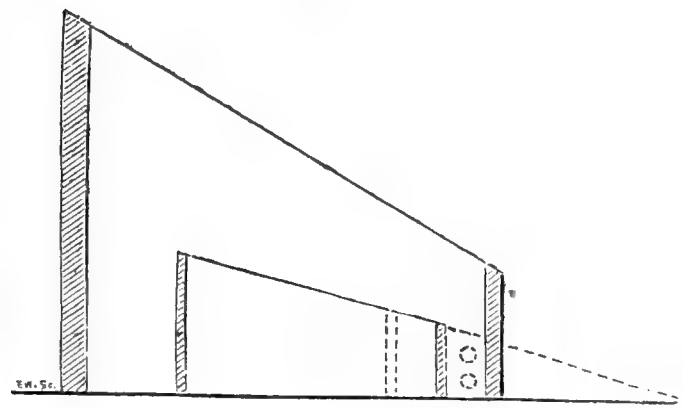
6. We prefer the Vines being planted inside, and in the front as in your case, provided the front wall is on arches, and the inside border is the higher of the two when compared with the outside border. The wider the inside border, the more secure would your roots be at all times. Both inside and outside must be well drained.

7. Now, if your Vines are already planted outside, the building of another wall three feet further out will be sure to injure the roots. If we altered the house at all, we would make it at least three or four feet wider. Then if the Vines were strong and vigorous, though mismanaged, and showing little signs of being too deep, we would begin at the outside of the border, and take up the Vines carefully until we came to the three or four-feet width of the border, doing it in the first mild weather, and wrapping the roots in damp moss in mats, and keeping them there until the foundations of the new front wall and the arches were made. The new border being drained, &c., the roots should be again replanted, and if the ground is covered with warm litter, they will soon begin to root afresh. The three or four feet untouched will also be a great help.

8. If the Vines are much out of order they might be cut down; and when they broke, select a couple of shoots or so from each. This would deprive you of a crop for one year, but lay a good foundation for good permanent Vines afterwards. If it be feared that no part of the border has previously been well drained, we would take the Vines up entirely: if not very old, make a proper border, and either transplant and treat as above, or plant young Vines rising two years from the bud.

9. As to placing the Vine-stems outside, see the whole matter discussed last week, where the practice could be varied according to circumstances. To enable you to do so, and yet have a forcing-bed in your house, according to circumstances, without exciting your Vines—if you did not wish that to be done, leave your present front wall only slightly reduced, and your Vines may remain in the space between the two walls until you want to take them into the house; and by regulating the heat there by moveable shutters, your Vines may be all broken nicely before taken into the hothouse. As illustrative of what we

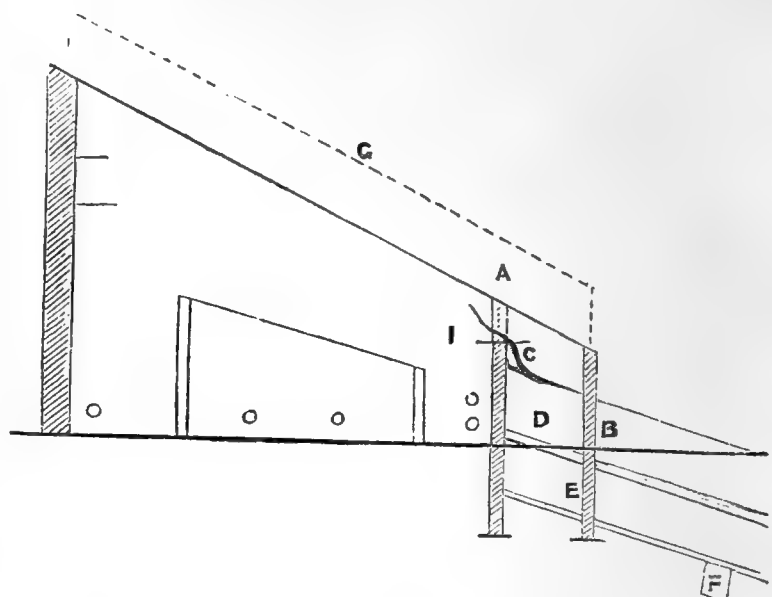
SECTION I.



mean, *fig. 1* will represent the house as it now is. The dotted line in the pit would show the pit lessened to widen the front path. The heating-pipes might then go next the wall; and if there were any glass in the front wall a shelf might be placed over the pipes, also represented by dotted lines. *Fig. 2* represents the same house widened three feet, but not raised at the

back, nor the slope of the roof changed. A the old front wall, with moveable glass sashes or other means on the top of it, it being reduced that much in height. B the new front wall on

SECTION II.



- | | |
|---------------------------------------|--|
| A. Old wall. | E. Rough drainage. |
| B. New one on arches. | F. Drain. |
| C. Border in which Vines are planted. | Dotted line, G, will show the house raised two feet. |
| D. Border. | |

arches. C the space between the two walls in which the Vines are planted, and in which, brought down from the rafters, they are kept when in a state of rest—or when wanted to break them slowly, by giving a little heat from the inside of the house. This arrangement will permit of the house being used as a stove in winter, or for forcing anything early before it is deemed advisable to set the main Vines going. If deemed advisable to force the Vines very early, two or three pipes for hot water might be put among the rubble below the soil of the border, and that part beyond the roof, be covered with dry litter, and a waterproof covering early in October.

With sufficient ventilation, it tells much in an economical point of view to have all the roof fixed. If you raised the back wall two feet, and made the new front wall four feet, with part of it glass or not, the roof would have the appearance of the dotted lines *fig. 2*.—R. FISH.]

STEAD'S IMPROVED PATENT VENTILATING CHIMNEY TOPS.

WE have received such favourable reports relative to the efficacy of these chimney tops in curing chimneys long known as "inveterate smokers," that we give the invention this prominent notice, with illustrations and an abstract of the specification.

These improvements consist in the formation of chimney tops, so that an upward current of air may be insured, thereby preventing the wind from descending in the chimney, and causing it to smoke in the room or apartment connected with it; the main object being to so arrange a series of wind-guards and wind-accumulators, that the upward current inside may be greatly in excess. For this purpose, on the outside of the pipe or tube forming the chimney top, is fixed a series of vertical ribs with tapering cross pieces attached to the edge thereof, forming a series of T-shaped ribs round the said pipe or tube. When the wind strikes the chimney top it enters between these T-shaped ribs, and its egress being prevented by the overhanging edges of the ribs, it is forced to travel upwards, through openings provided, into the interior of the chimney top, and thus causes an upward current. A series of chambers are also provided round the exterior of the chimney tube or pipe, and communicating with the interior, for the purpose of increasing the upward current of air. And also short interior tubes or flat rings, for directing and dividing the currents.

Fig. 1 is a front elevation; *fig. 2*, a plan; *fig. 3*, a sectional

elevation; and fig. 4, a sectional plan through x, y , of a chimney top constructed according to this invention. In each of the above-mentioned figures the same letters of reference indicate like parts.

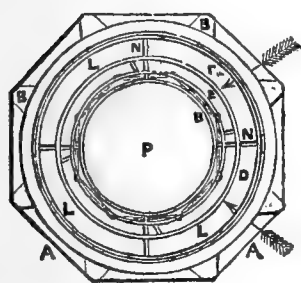
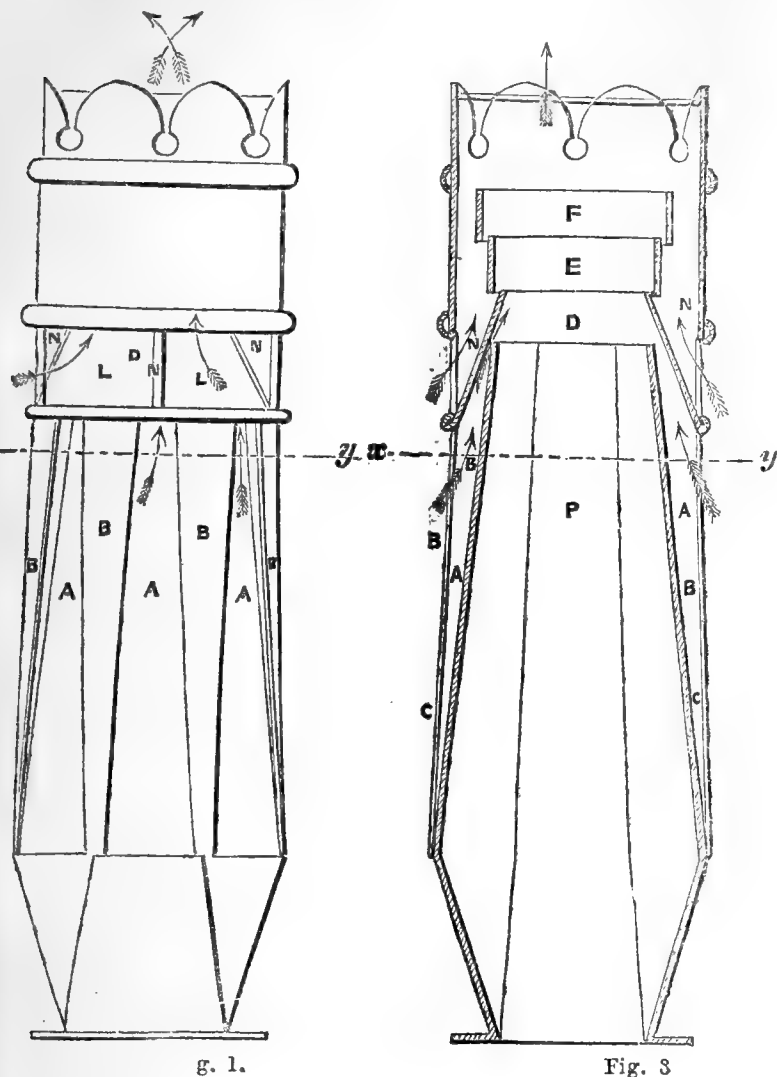


Fig. 2.

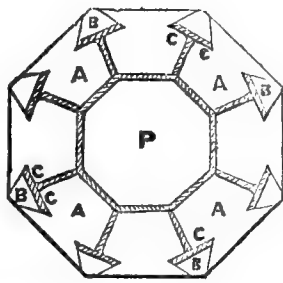


Fig. 4.

A, A, A, are the spaces between the vertical ribs or T-pieces fixed round the chimney top, into which the wind enters on striking the chimney, and its egress is prevented by the T-pieces B, B, the overhanging edges C, C, confining the wind, and forcing it to travel upwards as shown by the arrows, into the interior of the chimney P. The chimney may be made octagonal, round, or any other suitable shape or form, but the inventor prefers an octagonal shape as shown in the drawings.

The conical-shaped piece D immediately above the T-pieces, serves as a guide for the wind accumulated by the T-pieces underneath, and the upper surface of the said conical piece is divided by vertical partitions N, N, which serve also as supports to the upper part of the chimney top, and form a series of chambers or wind-accumulators, L, L, L; there are four chambers or accumulators in the drawing, but the inventor does not confine himself to that or any number. These wind-accumulators, L, L, L, have communications with the chimney, and the wind passing through them assists to make an upward current therein. The two rings or short tubes, E and F, serve to direct and divide any downward currents which are thus separated and divided as to offer little, if any, resistance to the upward currents of air.

The patentee thinks that this invention can also be used for ventilating workshops, manufactories, public or other buildings,

or edifices, as he believes the upward current in the chimney or ventilator would draw up and remove all foul or vitiated air that accumulated at the roof or ceiling, and keep up a circulation of air in the building room, or apartment.

HYMENOCALLIS LITORALIS AND ISMENE CALATHINUM.

WILL Mr. Beaton tell me what is the matter with my bulb of *Hymenocallis litoralis*, and what I can do to cure it? It has been kept in a cool greenhouse, and the frost has not touched it; yet the ends of all the leaves have become flaccid, as if frost-bitten, and are decaying from the points down. I imported the bulb from M. Van Houtte last autumn, and potted it at once in rotten turf with a little sand and well drained.

In Mr. Beaton's articles on bulbs some years ago (to me the most interesting series of papers you have ever published) he places this one among the hardy plants, but M. Van Houtte in his catalogue says it should be placed in the stove in winter. Do they, perhaps, speak of two varieties?

Ismene calathinum. This, according to Mr. Beaton, is half-hardy, but Van Houtte says it should be plunged in the open ground in summer, and taken to the stove towards the end of September, where it will soon show its flowers in all their beauty. Mine are still quite dry and in the greenhouse. Am I right?

How is it that prizes are never offered for these beautiful flowers? I am sure that if this were done they would form a most interesting part of our exhibitions.—W. B. S.

[Mr. Beaton says that he never saw *Hymenocallis litoralis*, or wrote a word about it. He knows M. Van Houtte very well, but Mr. Beaton never knew any one who had ever seen or grown the bulb which Jacquin called *Pancratium litoralis*, and which ought to be the *Hymenocallis litoralis* of Van Houtte. The only *H. litoralis* that was ever known and figured in England is a half-hardy Mexican swamp bulb referable to *Hymenocallis adnata*. It is figured in the twenty-first volume of the "Botanical Magazine," 825, as a var. of *Pancratium Dryandri*. Again, the same bulb is figured in the "Botanical Magazine," vol. xlv., fig. 1879, under the name of *Pancratium distichum*; and a third time the same bulb gets a place in the same work under a fresh name—*acutifolia*, "Botanical Magazine," vol. liii., fig. 2621. It is the *Pancratium acutifolium* of Sweet's "Hortus Britannicus." And in the eleventh volume of the "Botanical Register," fig. 940, the same bulb is called *Pancratium mexicanum*, and that one bulb under five or more names in our best works on British botany, is just as hardy in England as the *Amaryllis belladonna*, but it should stand in a cistern of water from the end of May to September. What Van Houtte's *Hymenocallis litoralis* may be Mr. Beaton cannot tell, or what Jacquin's *litoralis* may have been it is now too late to inquire for any practical use. Some of the Mexican *Hymenocallis* require stove heat, and all of them from farther south will not do out of the stove. Jacquin said positively his *litoralis* was from the island Tierra Bomba, near Carthagena, in latitude 11° north; but his assertion was flatly disproved in English nurseries—as at Lee's, Hammersmith, and Loddiges', at Hackney, where Jacquin's plant proved to be the same as *Pancratium mexicanum*, introduced direct from Mexico in 1816, and again in 1830. Practically, therefore, there is no *Hymenocallis litoralis* in existence. Practically, also, these *Hymenocallis* are amongst the most easy bulbs to cultivate. The only secret is to give them very strong loam and immersion in summer, or at least saucers under the pots, to be kept constantly full of water in summer; and those of them, like the present subject, which do not like greenhouse temperature in winter, must be accommodated with stove heat, for there is very little reliance to be placed on their names in any books, or nurseries in Europe. They come closer in their looks and affinities than the varieties of the *Polyanthus Narcissus*, which they represent in the tropics.

Ismene calathinum. If our friend M. Van Houtte has really recommended this bulb to be grown in a stove in winter, as you say he did, our friend does not know this *Ismene* at all, for it never grows in the winter at all, no matter what house or part of the world you have it in. Who has seen a pot Hyacinth growing away in June and July may have seen some kind of *Ismene* growing in a stove at Christmas, but no one else ever did. But how long has your calathinum been "still quite dry?" ours are hardly dry yet. We set out ours, or pot them in April, and take them up in October, exactly as we do Potatoes, and the

first thing our "roots" do after planting or potting is to flower away most heartily in very sandy soil; and how Van Houtte blooms them when they go to rest, as you say, shows that he means quite a different family of bulbs altogether. But why go to the Continent to get cheap bulbs, and wrong names, and false notions, when the true and sterling can be had in London for an extra trifle? Have you the monograph on bulbs and tubers just published by the Wellington Road Nursery firm?]

STOVE ORCHIDS.

(Continued from page 175.)

WINTER TREATMENT.

APPLICATION OF WATER.—*Syringing.*—During this season most of the Orchids should be at rest, or preparing for that state, and, therefore, do not require syringing, especially such species as have pseudo-bulbs. Some few, however, that are of an herbaceous habit, as, for instance, the genus *Huntleya*, require the constant use of the syringe all the year, because in their native habitats they grow near the spray of waterfalls. Also, such of the Indian species as have no pseudo-bulbs should on the mornings when the sun shines have a gentle dewing from the syringe. This class of plants, of which *Aerides* is the type, if exposed for a long time to a high, dry heat, will be apt to shrivel, showing that they are perishing, or at least starving for want of moisture. Whenever this is perceived let them have such a syringing as may renew their strength. It is a good plan to place all such plants together in the house, in order that in wetting them others that do not need so much, or any in winter, may be kept dry. Plants that are grown on logs need more water from the syringe than such as are grown in pots: therefore, continue to moisten such even when at rest occasionally, to keep them fresh and healthy.

Watering with the Garden-pot.—In winter this implement will be very little required. Keep the compost just moist enough to prevent the leaves from drying up too much. The terrestrial species with bulbs should be placed on a shelf where no water can reach them when at rest. Others that are herbaceous and evergreen should have enough water to keep them gently growing. The genus *Cypripedium*, and similar genera, require watering all the year, but of course less in winter than in summer. This partial cessation of moisture in dark, ungenial weather gives a kind of rest even to such species, enabling them to start into vigorous growth in spring, and flower more abundantly. The grower must be content with these general instructions on this important subject of watering in winter. Experience and observation must guide him as to the particular time to cease giving water to the plants when going to rest. With these few preliminary remarks on watering, I now proceed as I did on summer treatment, to give a calendarial monthly account of work to be done in the Orchid-house in winter, commencing with

SEPTEMBER.—In this month we have often cold nights: hence it is necessary to look in the early part of the month and see that the fireplace and hot-water pipes are in good order. When the thermometer out of doors indicates 45° in the morning, light the fire and raise the internal heat to 60° without sun, and 65° with sun. Let the fire die out at night, so that the heat may be lowest during the night. Shading may now be dispensed with. Let the blinds be taken down and stored away in a dry room. Give air only when the sun shines, and attend to syringing and watering as directed above.

OCTOBER.—The general stock of plants should now have perfected their annual growth. Many of the *Dendrobii* will be shedding their leaves on the perfected bulbs. These leaves should be removed as they ripen and decay to prevent mouldiness. All plants in that state should be removed to a cooler house to induce perfect rest. *Calanthe vestita* and some others will be in flower, and such ought to be kept dry on the foliage and flowers, but moist at the roots. See that the roots of *Cycnches* and allied genera are in a dry state, or they will perish and thus weaken the next year's growth. In this month collect soils, such as fibry peat, both with and without sand, sphagnum moss, cowdung, turfy loam, dried leaves, &c.; also, break potsherds, make hooked pegs, and order new pots if needed, so that when all these articles are wanted they may be ready at hand. Keep the fires going in cold weather as directed for last month.

NOVEMBER.—Proverbial for being dull, dark, and dreary.

Such weather has its influence even upon plants in an artificial climate. The Orchid-grower will find it necessary to keep up a moderate dry atmosphere, and fires almost night and day. Should sunny days occur give a little air and raise a moisture by wetting the warm flues or pipes in the mornings only. Cold nights will now happen, and if moisture settles upon the leaves they will not be benefited but injured thereby. Keep down growths now, for shoots made now are sure to be weak if they manage to exist through the winter. Should any dust or green confervæ appear on the leaves or surface of the composts let them be removed, the first by washing the leaves with a soft piece of leather or sponge (I prefer the first), and the others with the finger and thumb, or a short, flat-pointed stick, always being mindful not to injure the roots. Look to the fires and keep up a drier atmosphere.

DECEMBER.—In this month we have often clear, bright, sunny days. If not very frosty admit air over the warm pipes, and steam the houses whenever such a bright day is likely to occur. Some *Dendrobiums* will now be showing their flower-buds. If desired to bloom early such should be removed to a warm part of the house, and others kept back by being cool. By this method the season of blooming may be greatly extended. Many of the American species, such as *Cattleya*, *Lælia*, &c., will now be making fresh roots, but let not the amateur be tempted thereby to increase watering them. The moist air of the house with slight syringing just on the roots, will be sufficient for them. Too much moisture would only induce premature, weak, non-blooming shoots. Use the fires just to raise the heat enough to keep the plants from suffering from cold. This is a good season to destroy insects, for the methods of doing which see *Insects*.

JANUARY.—Some plants during this month will be beginning to grow. The old but handsome *Phaius grandifolius* is an example. Such should be freely watered and otherwise encouraged to grow on to flower. In this month the genus *Cyrtopodium* should be potted and gradually induced to grow, in order that its large pseudo-bulbs may be fully developed. Should the weather be very severe, and it can be managed, cover the roof with some light substance that will keep off the frost. This will be much better than forcing up a great fire heat. Give moisture in the mornings only, and air on all favourable occasions.

T. APPLEBY.

(To be continued.)

NEW BOOK.

THE ROSE ANNUAL.*—In this beautiful Annual of Mr. Paul's, we have all the information relating to Roses that has been gathered together during the past year. We have first of all four beautifully drawn portraits by Andrews of *Empereur de Maroc*, *Victor Verdier*, *Duc de Magenta*, and *Comtesse de Chabrilant*—four magnificent Roses; and then we have a great deal of pleasing talk about the merits and performances of the best kinds of Roses during the past season. This is a really useful publication, skilfully prepared, and one which cannot fail to be highly appreciated by all who are admirers of this lovely flower.

ENTOMOLOGICAL SOCIETY'S MEETING.

THE December Meeting of the Entomological Society was held on the 3rd ult., J. W. Douglas, Esq., President being in the chair.

A box of very fine Beetles, recently received by Mr. Stevens from Mr. Wallace, captured in Ceram one of the islands of the Eastern Archipelago, were exhibited, containing specimens of the interesting Longicorn Beetles, *Pascea Idæ* and *Monohammus Grayi*; also both sexes of the singular *Eucheirus longimanus*; likewise some beautiful *Buprestidæ*, *Lucanidæ*, &c.

Mr. King exhibited a box of rare British *Lepidoptera*, including *Leucanea putrescens*.

The Rev. Mr. Hogan exhibited specimens of an apparently new phyllopodous Crustacean belonging to the genus *Cheirocephalus*, and some blind Well Shrimps (*Nephargus* sp. ?) from the neighbourhood of Andover.

Mr. Lubbock communicated a notice of a curious parasite found in the bodies of humble bees, named by Léon Dufour *Sphærolaria Bombi*. This creature was only known in an adult

* *The Rose Annual* for 1860-61. By William Paul, F.H.S. London: Kent & Co.

state; and Mr. Lubbock was desirous of obtaining Bombi at this period of the year for the purpose of learning the mode of its development, as well, if possible, as the manner in which it obtains an entrance into the body of the bee.

Mr. Westwood exhibited a singular pale variety of *Alus repandaria*, taken by Mr. Daubeny, of Magdalen College, Oxford, the markings forming a link between the type and the variety named *conversaria* by Hübner; the subapical strigæ being very acutely undulated, and preceded by a large, nearly black patch. Mr. Westwood further directed attention to a monstrous specimen of a two-winged Fly, *Eristalis siniclis* of Meigen, presented to the Hopeian Collection in Mr. Wells' Cabinet of British Insects, in which the head is entirely enveloped in the thin semitransparent pellicle forming the true pupa skin; the upper part of the head being, moreover, surmounted by the transverse-lunate piece of the indurated head-covering of the larva, through which the horns of the so-called pupa had been protruded. This lunate piece is represented by Reaumur (*Mémoires*, vol. iv., pl. 33, fig. 6, d, d). And, as in looking at the head from the front the open space between the upper part of the pellicle and the lunate piece is seen to be traversed by two internal prolongations of the horns extending to the pellicle itself, it seemed not improbable that these two horns are, in fact, the antennæ-cases. Monsters of this kind, bearing some analogy to children born with a caul, are of great rarity; a *Noctua*, described by Muller, and a Butterfly, *Nymphalis Populi*, figured by Wesmæel, being the only recorded instances. A *Dyticus*, however, in Mr. Bowring's Collection, and an Emperor Moth in Mr. Stephens' Cabinet in the British Museum, also agree with the preceding, retaining in the perfect state the head-covering of the larva. Mr. Westwood further directed attention to the statement made by Mr. Curtis that the Death's-head Moth, on emerging from the chrysalis, has its legs enveloped in a thin pellicle subsequently cast off; and suggested that this pellicle was probably analogous to the thin skin cast by the May Flies after their first flight, and which appears equally to be identical with the thin pellicle covering the real pupæ of the coarctate *Diptera*, such as that of the *Eristalis* mentioned above.

Mr. G. R. Waterhouse made some observations on the species of *Donacia* and *Cassida* in the Linnaean Cabinet, and upon the nomenclature of the British species of the genus *Triplax*.

Mr. Stevens exhibited a considerable number of species of *Staphylinidæ* recently captured in a small quantity of moss, showing this to be an advantageous mode of collecting at this season of the year.

Dr. Knaggs exhibited some minute eggs apparently pierced by a parasite, and stated that he had found the eggs of *Trochilium bembeciforme* deposited on the leaves of Sallow stumps.

TRADE LISTS RECEIVED.

Catalogue of Hardy Trees, Shrubs, Coniferae, American Plants, &c., by James Veitch, jun., King's Road, Chelsea.—This is an admirable Catalogue, rich in all the best new things, and particularly in *Coniferae* and *American Plants*. The orthography is singularly correct, and may serve as a guide to young gardeners in the spelling of botanical names.

A General Descriptive Catalogue, by James and John Fraser, Lea Bridge Road, N.E.—A very excellent general Catalogue of a first-class nursery, including Trees, Shrubs, Fruit Trees, Roses, Greenhouse Plants, and Florists' Flowers.

Catalogue of Forest, Ornamental, and Fruit Trees, Shrubs, &c., by W. Drummond & Sons, Stirling and Dublin.—An excellent descriptive Catalogue of the general stock of an old and respectable nursery. The Catalogue is interspersed with many useful remarks.

Nursery List of William Pontey, Huddersfield.—This, also, is a good general Catalogue.

A Descriptive Catalogue of Flower Roots, Plants, &c., by Carey Tyso, Wallingford.—Mr. Tyso has long been known as a successful raiser and cultivator of "the good old-fashioned" florists' flowers, and particularly of the *Ranunculus*; and we have in this Catalogue a copious list of the best varieties now in cultivation.

TO CORRESPONDENTS.

HOLCUS SACCHARATUS FOR FORAGE (*A Subscriber*).—You had better purchase Clarke's "A Visit and a Plant, or Hints for the Culture in England of the North China Sugar Cane as a Forage Plant." It is full of

information on the subject, but with which we have had no experience. Any bookseller can procure the book for you.

CHEAP HOT-WATER APPARATUS (Yorkshireman).—Mr. Allen's directions and drawings are at pp. 134-5 of our No. 636. We know no more of Mr. Riddell's boiler than our correspondent said.

BOUQUETS, &c., ARRANGING (H. H. P.).—There is no work upon the subject. Much has been published upon the subject in former volumes. We saw something recently relative to bouquets in a French work, which we will inquire for.

LABELS FOR FRUIT TREES (P. Blake).—A strip of zinc, written on by Dunn's Portable Marking-Ink Pencil, and one end of the strip curled round a small branch, is better than any we have tried.

DRESSING FOR FLOWER-BORDERS (T. M.).—A mixture of equal quantities of horse-droppings and cowdung thoroughly mixed and broken fine would be an excellent dressing.

GISHURST COMPOUND (A.).—You may apply it as soon as the frost is over to kill the scale on your fruit trees. Eight ounces per gallon would not be too much.

HEATING A CUCUMBER-HOUSE (P.).—If you could have given an end section of your house, we should have known better, as the height and slope are something. All things considered it would be as well if your pipes were not more than six to nine inches from the soil. The nearer the soil the more effective the heat. We would, therefore, as soon have some rubble, finished by clean gravel over the pipes, as tan, unless you can give a good depth of the latter; and then, if very deep, when it begins to decay you will require more fire to heat the soil. Better have the pipes near the tan if used at all, and a small supply before placing the soil on. We would, under ordinary circumstances, prefer the rubble and no tan. The pipes should give enough of bottom heat for such a purpose, unless the house is very lofty, and a very long slope of glass. On the latter fact, the size of the flue will depend. Before making it, see what Mr. Fish says the other week, and especially if sunk. In ordinary circumstances, as you will need a continuous heat, we would build the flue for half the length brick on bed, and the other half brick on edge, and, if no return, take it right through the house, and make it a foot wide, covered with strong tiles, if with evaporating-pans all the better. The flue should be from twelve to fifteen or eighteen inches deep. We presume you mean for winter or early spring Cucumbers.

PRUNING AN OLD APHELEXIS (An Old Subscriber).—It will be a kill-or-cure affair, and for a fine plant we would cut no farther than last year's wood; but if the plant be unsightly, as it is, it will hardly be worth keeping, and therefore the cutting may be risked. Defer doing so until the end of March, or the beginning at soonest; cut them; leave the plant in a rather shady, warm place in the greenhouse for a month; and then place it in a forcing-house, or where it can have a higher temperature—say 60° to 65°, and damp the stem frequently, just keeping the plant moist—not wet. As said above, it will be kill or cure.

VARIOUS (Cardiffian).—We do not know sufficient of the Cucumbers you mention to enable us to give an opinion of them. Lynch's is a really good sort. It is no recommendation to a Cucumber to be twenty-eight inches long. What is wanted is a handsome fruit half or a little more than half that length, without a neck, of good flavour, and an abundant bearer. The bunches of Barbarossa and Champion Hamburg Grape are larger than those of Hampton Court; but the Barbarossa is much inferior to both in flavour.

FLOWER-BEDS (Belirium).—We see no reason to alter any of your flower arrangements, but your beds are not to our liking at all. There should be no "links" for connection in that style. Putting circular beds in geometric corners is the greatest fault in British gardens, and the only fault committed by Sir Joseph Paxton at the Crystal Palace. But if you round off the corners of the walks your beds are right. We never fill up the centres of small plots of grass with bed or shrubs in suburban gardens; being artistically "the breadth of effect," and practically the best place for the bairns to run about on, and, when they are old enough, the best place to learn shooting at target on.—D. B.

VINE-CULTURE (N. Y.).—There are very full directions as to Vine culture in the previous volumes. Much to suit your case a few Numbers back. We think if you contemplate spur-pruning, five main shoots would be enough in your space. Old Vines are often greatly renewed after spur-pruning by cutting them back, and getting young shoots afresh, whether to be borne on young rods, or older stems spurred. This, no doubt, caused your Vine to push strong; but unless you meant to fill the house with Sweetwaters, two strong shoots would be enough. As it is, we would leave the three best for a crop, shortening them about one-quarter as the Vine is old. Ultimately we would only take two shoots from the Sweetwater, and two each from the other Vines, which will fill the house, more especially as you keep plants in it. The young Vines we would cut down nearly to the bottom of the rafters next year, and the year following to half the length—less, if weak, and take two or three bunches from each.

RHUBARB (C. G. Read).—The earliest scarlet Rhubarbs are Buck's Early or Elford and Tobolsk. These are succeeded by Mitchell's Royal Albert and Myatt's Linnæus. We do not know of any other small-stalked red varieties. Your green sort appears from your description to be the variety called "Gooseberry."

SOW EATING HER YOUNG (W. A.).—We never found or heard of any cure for this bad habit. We shall be obliged by any of our readers giving any information on the subject.

CUCUMBER FOR COMPETITION (Aut Caesar aut Nullus).—Either the Manchester Improved or Carter's Champion.

RABBITS' DUNG AND SAWDUST (A Croydon Subscriber).—Put on as much as you would of any other common dung-manure. We have no knowledge of dressing rabbit skins.

NAMES OF FRUIT (R. P. D.).—1, Fondante de Malines; 2, Doyenné Defais; 3, Beurré Diel; 4, unknown; 5, Easter Beurré; 6, unknown; 7, Lewis; 8, not known; 9, Waltham Abbey Seedling; 10, Court of Wick; 11, Parry's Pearmain; 12, Margil; 13, Nonesuch; 14, Winter Nelis; 15, Old Nonpareil.

NAME OF PLANT (P. W. J., we think).—*Thysanacanthus Schomburghianus*, commonly known as *T. rutilans*.

POULTRY AND BEE-KEEPER'S CHRONICLE.

POULTRY SHOWS.

JANUARY 2nd and 3rd. CORK. *Sec.*, J. Dowling, Janeville, Sunday's Well. Entries close December 15th.
 JANUARY 16th and 17th. POULTON-LE-FYLDE. *Hon. Sec.*, Mr. J. S. Butler. Entries close January 1st.
 JANUARY 25th and 26th. CUMBERLAND AND WESTMORLAND. *Secs.*, Mr. M. W. Hastwell and Mr. W. T. Armstrong. Entries close January 12.
 JANUARY 30th and 31st. ULVERSTON. *Secs.*, Mr. T. Robinson and Mr. J. Kitchen. Entries close January 10th.
 FEBRUARY 6th and 7th. LIVERPOOL. (Poultry and Pigeons). *Sec.*, Mr. A. Edmondson, 4, Dale Street. Entries close January 19.
 JUNE 4th, 5th, 6th, and 7th. BATH AND WEST OF ENGLAND.
 N.B.—*Secretaries will oblige us by sending early copies of their lists.*

THE PAST AND THE COMING YEAR.

It is true men are but children of a larger growth, and that trivial things shadow forth those that are more important. Most of us can recollect the joy with which we formerly cast aside old garments, or even those we were used to, to put on new ones. It may be, in such a case that outward adornment and personal vanity had to do with it; but in more serious things we fear that those taught by experience prefer the untried. The blessed property of Hope always shines on the future; and the new year appears in the distance, free from all the defects and imperfections of that slipping from under our feet. It matters not that the same hopes and expectations have long been ours and that they have not been fulfilled; the past is the past, and we look forward. In early life at school each degree above that we occupied was the object of ambition. Then we aspired to be leaders; then the period of adolescence was impatiently endured—manhood must be reached; and *the something* unattained was still that which was most desirable.

Many years have passed over our heads since we felt the truth of the foregoing. We are, nevertheless, still subject to the same influences.

It is often matter of pleasing reflection to us that we can look on all our subscribers as friends. We believe we have no good wishes for them that they do not reciprocate; and in imagination we return the pressure of very many thousands of pairs of hands. We also congratulate ourselves that in the review of the past year we have to regret no *duels à outrance* in our pages, but just little passages of arms between friends with blunted weapons. The wounds scarcely hard enough to show the defects and weak points of the armour. It may be that by some unguarded word or unweighed expressions we have given pain. If we have we are sorry for it—we would be impartial.

Generally, our last Number wishes to all our subscribers a merry Christmas. That festive season will have passed when this is in our readers' hands. We trust it will have been happy with all.

We inaugurate the new year. Subscribers, contributors, and friends, we thank you for your support and co-operation. We are glad to be able to tell you we still prosper and increase in circulation. We are thankful we are all spared, some to offer congratulations, others to receive them; and so, now in this our annual familiar paper, we write our troubles in sand, our blessings and gratitude for them in bronze. We have tried to do so before, and we have found it armour of proof. We offer the suggestion to our readers, convinced that nothing will go farther to enable them to realise that which we heartily wish to all—

A HAPPY NEW YEAR.

REVIEW OF POULTRY DURING 1860.

THERE has not, perhaps, ever been a season more trying for rearing poultry than that of the year just closed. It has been observed for some time past that January and the early part of February are more favourable than March and April for rearing chickens; but this year it was better than ever, for it was dry. For months after we had but one cuckoo's note of "wet day," "more rain." The chickens suffered; there was no dust; the earth had no surface, but formed a vast bog, in which chickens sank. Wing and tail-feathers became wet and heavy, and it may truly be said, the birds dragged a miserable existence till they died. That was not all; they were short of food, especially of that food of insect and animal life with which the earth teems after a shower in warm weather, and which a brood pursues

energetically. They got grain in small quantities and of inferior quality. They had to complain, as many of the beer-drinking public do, that "they don't know how it is, but when barley's dear, the beer is not satisfying." Even the best Chicken Show in 1860 had a pinched look, as though they had been on short commons, formed one of a raft party on the "deep, deep sea," or lived in a besieged city, waiting twenty-three out of twenty-four hours for the ration of meal—viz., just so much as would weigh against a musket ball. Spite of this, we have to note an increase in weight of Dorkings. We doubt whether four better pens will ever be seen than those that headed the adults at Birmingham. There may be a small increase caused by a favourable season, but it cannot be great. These birds still furnish the strongest classes at almost every Show. They also form an exception to the rule that the hen and pullet classes do not fill as they should. The Dorkings are numerous.

Spanish are decidedly looking up. There has been an increase of entries, and a marked improvement in quality. We are glad of it. No bird has greater right to popularity than the Spanish. We are very glad to see trimming is nearly given up.

Game are perfect; they also being very large classes. The sweepstakes for single Game Cocks are popular and attractive. We do not wonder at it; it is an admirable sight.

We shall be glad to see the Duckwings more numerous. We think, at some Shows, the prizes for Black and White should be diminished, in order to add to those for Black and Brown Reds.

The adult Cochins have been more than usually meritorious, but the chickens have not called for particular comment. The Whites have been weak. Brown and Partridge-feathered are rising rapidly to a very important class. They deserve every encouragement, as their admirers send them in large numbers and of great merit.

Brahma Pootras are steadily progressing; they are becoming understood and appreciated, and will soon require more prizes.

The quality of many of the Polish fowls leaves nothing to desire, but their numbers are very small. If proof were wanted of their excellence, it might be found in this fact—that at Birmingham every pen in the Silver class was noticed by the Judges. They were truly beautiful. Some of the Gold were also excellent.

Golden-pencilled Hamburgs have improved. They are now what the Silvers were. We know not why both should not be good alike, but they never are; they play at see-saw, and Silvers of late are at the bottom. Both Golden and Silver-spangled are now very good; and there are so many experienced breeders that but little margin is left for decisions in these classes.

Malays are very good, but they lack numbers.

We like Bantams, and are therefore happy to report satisfactory progress in every class.

The Gold and Silver Sebrights have been better than we have seen them for many years. The Game, like their full-sized brethren, are perfect. The Blacks are a numerous and meritorious class.

Geese have weighed well, and we have had the introduction of a new and seemingly meritorious breed—White ones, the Improved Dorchester. They make more progress in weight than the Grey and Mottled. These latter seem to have reached the limit.

There has been rather a falling off in the weight of Aylesbury Ducks. Birds of 8 lbs. have been very scarce. The Rouens form the most numerous of all Duck classes, and they are now bred and shown to perfection. The class for Black Ducks is a success. At many Shows encouragement has been given to the exhibition of curious and rare water fowl. This has been interesting to the naturalist as well as to the general visitor. We have seen the Mandarin, Carolina, Ruddy Sheldrake, Bahama, and White-eyed Ducks.

There is little to note in Turkeys, save one remarkable pen that was shown at Birmingham, blue-feathered with black spots.

Notice must be taken of the remarkable interest now excited by Pigeons. If it continues, they will soon be as popular in England as in Germany.

Shows have been almost uniformly successful in 1860. Everything has tended to prove the pursuit of poultry to be more popular than ever, and the number of its lovers to be on the increase. We are also thankful to say everything has been cheerful and harmonious.

The only novelties have been the institution of Silver Grey classes at Birmingham, the adoption of hen and pullet classes at many Shows, and the alteration in the days of holding the winter one at the Crystal Palace. All these seem to have been successful.

The well-known strains have been, as usual, in front of the classes; but there has been enough success achieved, and of a very high character, to encourage beginners. They must, however, bear in mind there is no royal road, not even a golden one, to success. There is much to learn in everything; were it not so, no one would prize success.

With these remarks we close our season of 1860. We are thankful our report is a cheering and satisfactory one; and we hope, should we be spared, that the record of 1861 may be as pleasing to all whom it may concern.

ADVENTURES OF A SPANISH COCK.

I AM afraid that if the Spanish cock, whose adventures at Birmingham are narrated in the last COTTAGE GARDENER, has not a yellow face through jealousy, his owner has. What right has this gentleman to insinuate that our Poultry Judges hurry over their duties in a slovenly manner, or that the clerical Judge "takes his cue from any one?" Did your correspondent make the same complaint when he carried off the first prize at Birmingham? It would have been fairer if your correspondent had given at least his initials; but as he proclaims the fact of his having sold a dozen black Spanish eggs last season for *two guineas*, from first-prize birds at Birmingham, I think we can pretty well guess who he is. If I am right in my conjecture, I can only say that I think this gentleman's birds have been very much over-rated, and that they are not to be compared with the beautiful birds of Messrs. Rake, Rodbard, and Teebay. When, in his remarks on "trimming," your correspondent plainly accuses such Judges as Messrs. Hewitt and Bailly of saying one thing and meaning another, I do not think his criticism is worth much. I am not personally acquainted with either of our four eminent Poultry Judges, but they are proverbial among exhibitors for giving a right judgment in poultry matters. Nor do I think, when they read the "Adventures of a Young Spanish Cock," they will have any reason to apply to themselves the maxim of Cicero—

"Delicto dolere, correctione gaudere, vos oportet."

—J. B.

LORD TREDEGAR'S POULTRY EXHIBITION.

WE last week gave full particulars as to the prizes and commendations, and shall now proceed to make a few comments on some of the principal pens shown at this Meeting. Both classes for *Spanish* fowls were exceedingly good, the pair of hens in the adult first-prize pen particularly so. The competition in the chickens was undoubtedly excellent; Mr. Rodbard, even with his well-known birds, being very closely pushed by pens of Spanish chickens that, only some three or four years back, would have been deemed certain winners. The next variety were the *Grey Dorkings*, a very striking feature being the hens, almost without exception, in both classes, were perfect, the cocks being in no way their equal. Pen 23 contained, no doubt, a pair of hens fit to add material credit to any Show; but as in this case no cock at all was exhibited with them, they lost all opportunities of distinction. The *White Dorkings* mustered only a single pen. In *Game* fowls, the best varieties of any were the *Black-breasted Reds* and the *Piles*: we noticed several pens of these beautiful birds that were evidently in just the condition to "hold their own" alike in the exhibition-room or the cock-pit. In *Cochin-China* fowls, the name of Mr. Henry Tomlinson, of Birmingham, and first prizes seem almost in connection at all our principal Shows for some years past at Monmouth; although that gentleman still maintained his position, it is some time since he met with so uncomfortably close rivals. Very few breeds of poultry have improved so generally of late as the *Cochin*. The *Malays* were very superior, they being the same fowls so commonly prizetaking, not one new name even appearing among the competitors. The *Hamburgs* were quite equal to our expectations; all the classes would have done credit to any Exhibition, the *Golden* variety being, perhaps, the better of the two. The *Polanas*, though very limited in the amount of entries, were shown by some of the most notorious exhibitors we have, and seemed to be the most interesting features to the visitors who constantly thronged the avenues from end to end. This draws to our mind a suggestion that another year, with so well-filled a Show and large a company, it would be prudent to leave a mid-way passage through the centre row, as we noticed not a few

individuals of both sexes laughingly, though against inclination, were compelled to go with the stream the whole round before they could reach the pen their tastes or interests made them anxious to inspect more particularly. As almost universally the case in Shows now-a-days, the *Game Bantams* were both numerous and of the highest order. Some of the *Black-breasted Red* hens were the perfection of neatness, and "gamey" as could be desired.

The *Rouen Ducks* and *Aylesburys* showed strongly and well. The *Geese* and *Turkeys* were very first-rate.

The fawn-coloured first-prize *Turkeys* belonging to Miss Louisa Crawshaw were a magnificent pen; the same lady also taking first prize with a pen of *Empden Geese*, well worthy of especial mention.

Although prizes were offered for "any new variety" of *Geese*, *Turkeys*, or *Ducks*, none presented themselves, the three pens entered being of breeds long known to all poultry amateurs; consequently they were disqualified.

The classes for cottagers were far beyond expectation, and not a few pens therein exhibited would have certainly sullied the lustre of the first-prize pens in the general classes, had they been entered for that purpose.

It is due to the parties who superintend this popular Show to say, the arrangements, as contrasted with those of a few years back, are wonderfully improved; the acting Committee can now truly boast of having got together one of the best local Shows we have yet seen, and it is equally certain the attendance of visitors far outstripped pre-supposed calculations. Such a result is most grateful to those who, for the mere "love of the thing," toil through the heavy labours of a large Show; and, with the little hint we have dropped above, more easy locomotion will in future be attainable to visitors.

HALIFAX FANCY PIGEON SHOW.

THIS took place on the 21st instant, but we did not receive the prize list till late on the 22nd. That being the day we were compelled to go to press, to publish on Monday instead of on Christmas day, we could not include it in our last Number.

It is one of the most important of our Pigeon Exhibitions, and this year embraced 504 entries of birds from the most distinguished breeders over all England.

The Judges were Harrison Weir, Esq., Lyndhurst Road, Peckham; and P. H. Jones, Esq., High Street, Fulham.

The following were their awards:—

CARRIERS (Black Cocks).—First, P. Eden, Salford. Second, T. Colley, Sheffield. Highly Commended, M. Rake, Bristol; E. Ingham, Halifax. Commended, W. Tonge, Hull.

CARRIERS (Black Hens).—First, W. Cannan, Bradford. Second, Messrs. L. and C. Layland, Warrington. Highly Commended, P. Eden, Salford. Commended, P. Eden, Salford; R. J. Wood, Nottingham.

CARRIERS (Dun Cocks).—First, P. Eden, Salford. Second, R. J. Wood, Nottingham. Highly Commended, G. Goore, Liverpool. Commended, Messrs. L. and C. Layland, Warrington; J. Bairstow, Halifax. (A good class.)

CARRIERS (Dun Hens).—First, W. Cannan, Bradford. Second, P. Eden, Salford. Very Highly Commended, T. Colley, Sheffield. Highly Commended, T. Colley, Sheffield.

CARRIERS (Blue, or any other colour, Cocks).—First, T. Colley, Sheffield. Second, F. C. Esquilant, London. Highly Commended, W. Smith, Halifax. Commended, T. Colley, Sheffield; J. Bairstow, Halifax.

CARRIERS (Blue, or any other colour, Hens).—First and Second, T. Colley, Sheffield. Highly Commended, J. Bairstow, Halifax (White). Commended, J. Kershaw, Saddleworth; G. Goore, Liverpool (Silver); J. Bairstow (White). (A good class.)

POWTERS (Blue or Silver Cocks).—First and Second, M. Sanderson, Edinburgh (Blue). Highly Commended, W. Smith, Halifax (Blue). Commended, J. Huie, Glasgow (Silver).

POWTERS (Blue or Silver Hens).—First, P. Eden, Salford. Second, W. Smith, Halifax (Blue). Highly Commended, G. J. Maclean, Edinburgh (Blue). Commended, J. Swift, Halifax.

POWTERS (Black Cocks).—First, G. Ure, Dundee. Second, J. Brooke, Halifax. Highly Commended, H. Simpson, York; A. Cattley, York; J. Huie, Glasgow. (A good class.)

POWTERS (Black Hens).—First, J. Huie, Glasgow. Second, A. Cattley, York. Commended, J. Huie, Glasgow.

POWTERS (Red Cocks).—First, G. Ure, Dundee. Second, W. Smith. Highly Commended, P. Eden, Salford. Commended, G. J. Maclean, Edinburgh; J. Deakin, Sheffield. (A good class.)

POWTERS (Red Hens).—First, G. Ure, Dundee. Second, W. Smith. Halifax.

POWTERS (Yellow Cocks).—First, S. Shaw, Stainland. Second, W. Cannan, Bradford. Highly Commended, P. Eden, Salford.

POWTERS (Yellow Hens).—First and Second, P. Eden, Salford. Highly Commended, W. Cannan, Bradford. Commended, J. Swift, Halifax. (A very good class.)

POWTERS (White Cocks).—First, P. Eden, Salford. Second, T. Togetmeier, London. Commended, W. Smith, Halifax. (A good class.)

POWTERS (White Hens).—First, W. Cannan, Bradford. Second,

J. Cochrane, Glasgow. Highly Commended, G. Ure, Dundee. Commended, P. Eden, Salford. (A good class.)

SWEEPSTAKES FOR POWTERS.—First, P. Eden, Salford. Second, G. Ure, Dundee. (A good class.)

ALMOND TUMBLERS.—First, F. C. Esquilant, London. Second, M. Stuart, Glasgow. Highly Commended, P. Eden, Salford. Commended, M. Rake, Bristol. (A very good class.)

ALMOND TUMBLERS.—First, H. Wardle, Newcastle-on-Tyne. Second, M. Rake, Bristol. Highly Commended, P. Eden, Salford.

JACOBS (Cocks, any colour).—First, S. Shaw, Stainland (Red). Second, F. C. Esquilant, London. Highly Commended, M. Wicking, London; M. Rake, Bristol; J. T. Lawrence, Liverpool. Commended, S. Shaw, Stainland; W. Smith, Halifax. (A very good class.)

JACOBS (Hens, any colour).—First, J. T. Lawrence, Liverpool. Second, F. C. Esquilant, London. Highly Commended, M. Rake, Bristol; J. T. Lawrence, Liverpool. Commended, J. T. Lawrence, Liverpool. (An excellent class.)

TURBITS (Cocks, any colour).—First, H. Morris, Forest Hill. Second, T. T. Parker, Chorley. Highly Commended, M. Wicking, London; S. Shaw, Stainland; W. Hewitt, jun., Forest Hill. Commended, M. Rake, Bristol; G. Goore, Liverpool (Blue); W. Hewitt, jun., Forest Hill.

TURBITS (Hens, any colour).—First, M. Rake, Bristol. Second, M. Wicking, London. Highly Commended, T. T. Parker, Chorley; R. J. Wood, Nottingham. Commended, J. C. Brierley, Nottingham; Master F. Bird, Shipley.

BARBS (Cocks, any colour).—First, W. Smith, Halifax. Second, M. Rake, Bristol. Highly Commended, M. Stuart, Glasgow (Black); J. T. Lawrence, Liverpool; P. Eden, Salford. Commended, J. T. Lawrence, Liverpool; G. Goore, Liverpool (Black); W. Smith, Halifax. (Very first-rate class.)

BARBS (Hens, any colour).—First, M. Stuart, Glasgow (Black). Second, J. H. Craigie, Chigwell (White). Highly Commended, W. Smith, Halifax. Commended, M. Rake, Bristol; P. Eden, Salford.

OWLS (Cocks, any colour).—First, M. Rake, Bristol. Second, F. Mewburn, jun., Darlington. Extra Second, M. Rake, Bristol. Highly Commended, M. Wicking, London; T. T. Parker, Chorley; W. Hewitt, jun., Forest Hill. (A very excellent class. The Judges felt bound to award two second prizes.)

OWLS (Hens, any colour).—First, M. Rake, Bristol. Second, J. W. Edge, Birmingham. Highly Commended, M. Rake. Commended, M. Wicking, London. (A good class.)

FANTAILS (Cocks, any colour).—First, W. Taylor, Sheffield. Second, C. F. Allison, London. Highly Commended, S. Shaw, Stainland (White)*; G. Goore, Liverpool (Mottled Cock); G. Ure, Dundee (Blue); J. Baily, jun., London; W. Hewitt, jun., Forest Hill. (*Highly Commended as Indians.) A good class.

FANTAILS (Hens, any colour).—First, G. Goore, Liverpool (Black). Second, H. Morris, Forest Hill. Highly Commended, T. Rippon, Beverley; J. W. Edge, Birmingham; G. Goore (White)*; E. Archer, Forest Hill (White)*; W. Hewitt, jun., Forest Hill*; C. F. Allison, London. Commended, W. Taylor, Sheffield; J. Baily, jun., London. (*Highly Commended as Indians.) A very good class.

TRUMPETERS (Cocks, any colour).—First, F. Mewburn, jun., Darlington. Second, M. Rake, Bristol. Highly Commended, J. Baily, jun., London. Commended, M. Rake, Bristol.

TRUMPETERS (Hens, any colour).—First, M. Rake, Bristol. Second, F. Mewburn, jun., Darlington. Highly Commended, W. H. C. Oates, Beshorpe (White); M. Rake, Bristol; F. Key, Beverley. (A good class.)

RUNTS (Cocks or Hens, any colour).—First, W. Cannan, Bradford (Blue). Second, H. Child, jun., Birmingham (Cock). Highly Commended, E. A. Lingard, Kingsnorton.

NUNS (Cocks or Hens, any colour).—First, M. Wicking, London (Cock). Second, J. Firth, Halifax (Black Cock). Highly Commended, M. Wicking (Hen); J. W. Edge, Birmingham. Commended, J. C. Brierley, Nottingham.

MAGPIES (Cocks or Hens, any colour).—First, M. Wicking, London (Cock). Second, S. Millin, London. Highly Commended, S. Shaw, Stainland (Black Cock); H. Morris, Forest Hill. (A very excellent class.)

SHORT-FACED TUMBLERS (Mottles, Cocks or Hens, any colour).—First, W. H. C. Oates, Beshorpe (Red). Second, F. C. Esquilant, London (Cock). Highly Commended, P. Eden, Salford (Cock and Hen); J. Firth, Halifax (Cock).

SHORT-FACED TUMBLERS (Balds or Beards, Cocks or Hens, any colour).—First, S. Millin, London (Beard Hen). Second, M. Wicking, London (Balds, Cocks). Highly Commended, J. W. Edge, Birmingham; E. Archer, Forest Hill (Red Beard Hen). Commended, F. C. Esquilant, London (Bald, Cock).

TUMBLER (Mottles, Cocks or Hens, any colour).—First, J. W. Edge, Birmingham. Second, M. L. Fearnside, Huddersfield. Highly Commended, S. Millin, London (Cock).

TUMBLERS (Balds or Beards, Cocks or Hens, any colour).—First and Second, J. Sephton, Prescott (Cock and Hen). Highly Commended, M. Beljame, Edinburgh (Bald, Silver Hen). Commended, M. Wicking, London (Bald, Cock); M. Beljame (Beard, Blue Hen).

DRAGONS (Cocks or Hens, any colour).—First, E. Middleton, Oldham (Blue Cock). Second, G. Goore, Liverpool (Yellow Cock). Highly Commended, J. Brooke, Halifax (White Cock); H. Beldon, Bradford (Cock.)

ANY OTHER NEW OR DISTINCT VARIETY (Cock or Hen).—First, J. Baily, jun., London (Bagadotte). Second and Third, M. Wicking, London (Red Swallow and Brunswick). Highly Commended, J. Baily, jun. (Bagadotte and Swallow). Commended, S. Shaw, Stainland (Blue Russian); M. Beljame, Edinburgh (Blue Satin Hen, imported); S. Menzies, Birkenhead (Cock and Hen, Foreign); J. Bairstow, Halifax (Skircota Hen and Cock).

RAILWAY NEGLECTS AND CHARGES.

IN your remarks on the Poultry Show at the Crystal Palace you say, "Some disappointment and much inconvenience arose from the non-delivery of baskets by the railway company or companies. This is wrong. It is no boon for a company to offer to carry birds *free*, &c." Now, what I, in common with many other exhibitors, complain of is not only the delay in the delivery

of the birds, but also that, so far from carrying them free, they make *extortionate charges*, which I think the following facts prove.

First, as to delay in delivery. My birds did not reach Birmingham (on their return) till about two o'clock on Tuesday, though exhibitors were given to understand they would leave the Palace early on Monday morning, and ought, therefore, to have been in Birmingham on Monday afternoon; and the Secretary informs me they did leave the Palace on Monday, though he cannot state the hour. So that the birds were evidently kept without food from Sunday till Tuesday evening.

Secondly, railway companies as to the boasted liberality of carrying free. I sent two baskets, one a small one containing a pair of Pigeons, the other a couple of fowls, for which the London and North Western Company charge 1s. each, but on their return I had to pay 1s. 10d. for one, and 2s. 2d. for the other! and on inquiry at the London and North Western Company's office, I find they paid for the two baskets 10d. and 1s. 2d. So that one of the companies *boasting of their liberality in carrying the baskets free*, charge 1s. 2d. for a basket from the Palace to Gracechurch Street (because there is no real occasion to take them further), whilst the same basket is brought from London and delivered in Birmingham for 1s. The sooner such liberality is abandoned, and a *legitimate* charge made the more advantageous I think for the exhibitor.—J. PERCIVALL, *Harborne, near Birmingham*.

[This is not the only complaint we have received, and one well-known exhibitor has applied to the Crystal Palace Railway Company for remuneration for two birds which had died in consequence of being detained. We advise the Secretary of the Crystal Palace Poultry Show to make very stringent representations to the Railway Company; for a recurrence of such neglect will ruin the Exhibition.—Eds. C. G.]

KENDAL POULTRY EXHIBITION.

THIS, the sixth Exhibition of this Association, was held in the Shakspeare Assembly Room, Kendal, on December 27, 28, and 29, 1860. The following were the awards:—

SPANISH (Black).—A Silver Cup, the gift of George Carr Glyn, Esq., Member for Kendal.—First, R. Teebay, Fulwood, near Preston. Second, J. Dixon, Horton, Bradford. Third, J. K. Fowler, Prebendal Farm, Aylesbury. Highly Commended, G. Robinson, Highgate, Kendal. **Chickens.**—First, J. R. Rodbard, Aldwick Court, Wroughton, Bristol. Second, R. Teebay. Third, T. Kew, Dale House, Burton in Kendal. Highly Commended, G. Robinson.

DORKINGS (Coloured or White).—A Silver Mug, the gift of Major-General Upton, C.B., Levens Hall.—First, W. Dolby, jun., Syston Hall, Grantham. Second, H. W. B. Berwick, Helmsley, Yorkshire. Third, T. W. Hill, Heywood, Manchester. Highly Commended, J. Sergenson, Gowrey, Kirkby Lonsdale; J. Robinson, Vale House, near Garstang. Commended, W. Rutledge, Storth End, near Kendal. **Chickens.**—First, W. Dolby, jun. Second, T. W. Hill. Third, J. Robinson. Highly Commended, H. W. B. Berwick.

COCHIN-CHINA (Cinnamon and Buff, or Brown and Partridge-feathered).—A Silver Cup, the gift of the Hon. H. C. Lowther and Lord Bective, the Members of the County.—First, T. Stretch, Marsh Lane, Bootle, Liverpool. Second, J. Cattell, Mosely Wake Green, Birmingham. **Chickens.**—First, T. Stretch. Second, H. Tomlinson, Balsall Heath Road, Birmingham.

COCHIN-CHINA (White or Black).—First, W. Copple, Eccleston, Prescott. Second, M. Beethom, Ings, Staveley. Commended, G. C. Whitwell, Kendal. **Chickens.**—First, R. Loft, Woodmansey, Beverley. Second, G. C. Whitwell, Kendal.

GAME (White and Piles).—A Silver Cup, the gift of G. A. Gelderd, Esq., of Aikrigg End, Kendal.—First, W. Newby, Lawrence House, Levens. Second, T. Robinson, the Gill, Ulverstone. Third, J. Martin, Blakeholme, Newby Bridge. Highly commended, F. C. Ellison, Low Sizergh, Milnthorpe. Commended, J. J. Banks, Kendal. **Chickens.**—First, W. Newby. Second, G. C. Whitwell.

GAME (Black-breasted and other Reds).—First, J. Fletcher, Stoneclough, Manchester. Second, G. W. Moss, the Beach, Aigburth, Liverpool. Third, W. & N. Grimshaw, Pendle Forest, Burnley. Highly Commended, J. R. Rodbard, Aldwick Court, Bristol; J. Fletcher; S. Holmes, Butcher Row, Beverley. Commended, T. Robinson. **Chickens.**—First, W. & N. Grimshaw. Second and Third, J. Fletcher. Highly Commended, T. Robinson; E. Swainson, Nibthwaite, Newton-in-Cartmel. Commended, F. Atkinson, Lord's Plain, Milnthorpe; J. Peel, Hill Side, Lancaster; S. G. Price, Plymouth.

GAME (Best of any other variety).—First, W. Brocklebank, Southgate Ulverstone. Second, W. Thompson, Moresdale Hall, Kendal. **Chickens.** First and Third withheld. Second, T. Robinson.

HAMBURGS (Golden-pencilled).—A Silver Cup, the gift of R. L. Watson Esq., of Ecclelrigg, Windermere.—First, J. Munn, Heath Hill, Stacksteads near Manchester. Second, T. Robinson. Highly Commended, C. Bower, Bolton-le-Sands, Lancaster; J. Munn; J. Robinson, Vale House, near Garstang; Messrs. Hull & Parkinson, Market Place, Poulton-le-Fylde. Commended, T. Robinson; T. Procter, Settle, Yorkshire. (A very good class.)

HAMBURGH (Golden-spangled).—First, J. Dixon, North Park, Horton, Bradford. Second, W. C. Worrall, Rice House, Knotty Ash, Liverpool.

Commended, J. Robinson. *Chickens*.—First, J. Dixon. Second, W. Cannan. Highly Commended, J. Robinson.

HAMBURGH (Silver-pencilled).—First, J. Munn. Second, W. Cannan. Highly Commended, J. Dixon.

HAMBURGH (Silver-spangled).—First, R. Teebay, Fulwood, Preston. Second, J. Dixon. (A good class.) *Chickens*.—First, J. Robinson. Second, R. Teebay. Highly Commended, J. Dixon.

POLAND (any variety).—First and Second, J. Dixon. Highly Commended, T. Clowes, Froxmer Court, Worcester. *Chickens*.—First and Second, J. Dixon. Commended, H. Beldon, Barkerend Road, Bradford.

SINGLE SPANISH COCKS.—First and Second, T. Boucher, Birmingham. Highly Commended, J. Smith, Kent Side, Highgate, Kendal; M. Graham, Wildman Street, Kendal.

SINGLE COCHIN-CHINA COCK.—First, T. Saul, Stricklandgate, Kendal. Second, C. Bower, Bolton-le-Sands, Lancaster.

SINGLE DORKING COCK.—First, W. Ruttlidge, Storth End, Kendal. Second, J. Robinson.

GAME COCK.—A Silver Cup, the gift of Mr. George Hully.—First, J. Fletcher, Stoneclough, near Manchester. Second, J. S. Butler, Poulton-le-Fylde, Preston. Third, W. and N. Grimshaw. Highly Commended, Messrs. Munn and Schofield; W. Griffiths, Nantwich; J. Fletcher; G. Hully, Woolpack Yard, Kendal; J. Hindson, Barton House, Everton, Liverpool. Commended, J. Fleming, Sill Field; J. Dover, Captain French, Kendal. (A most excellent class.) *Cockerel*.—First, J. Orr, Cartmel. Second, E. Wells, Stricklandgate, Kendal. Commended, G. Robinson, Gamekeeper, Lane Head, Burneside.

BANTAMS (any variety).—First, Miss V. W. Musgrove, Aughton, near Ormskirk. Second, R. Moon, jun., Liverpool. Third, W. Lawrenson, Poulton-le-Fylde. Highly Commended, J. Dixon. Commended, R. Braithwaite, Ulverstone; I. G. Park, Moresby, Whitehaven.

GESE.—Prize, J. K. Fowler, Prebendal Farm, Aylesbury. (Second not awarded.)

DUCKS (Aylesbury).—First, S. Barlow, Manchester. Second, J. K. Fowler. Highly Commended, T. W. Hill, Manchester; J. Abbot, Kendal.

DUCKS (Rouen).—A Silver Cup, the gift of the Managing Committee.—First, J. K. Fowler. Second, J. Sergenson, Gowrey, Kirkby Lonsdale. Highly Commended, W. Richardson, Kendal; G. A. Gelderd, Aikrigg End, Kendal; T. Robinson; T. Hodgson, Carnforth Lodge, Carnforth.

PIGEONS.—*Carriers*.—First, G. Goore, Liverpool. Second, D. Thwaites, Rock Ferry Cheshire. *Almond Tumblers*.—Silver Medal and Second, G. W. Hartley, Kendal. Highly Commended, G. W. Hartley. *Tumblers* (any other breed).—First and Second, G. W. Hartley (Black Motules). Highly Commended, G. W. Hartley. Commended, J. W. Edge, Aston New Town, Birmingham; Master E. Sergenson, Huyton, Prescot. *Owls*.—First, A. Monkhouse, All-hallow's Lane, Kendal. Second, D. Thwaites. Commended, G. Goore, Liverpool. *Pouters or Croppers*.—First, A. Cattley, 5, Tower Street, York. Second, D. Thwaites, Rock Ferry, Cheshire. Commended, D. Thwaites. *Barbs*.—First, A. Monkhouse, All Hallows Lane, Kendal. Second, I. Monkhouse, All Hallows Lane, Kendal. *Fantails*.—First, J. W. Edge, Birmingham. Second, T. Elbington, Woodmansey, Beverley. Highly commended, A. Cattley, York. *Turbits*.—First, A. Monkhouse, Kendal. Second, J. W. Lawson, Beverley. Commended, G. Goore, Liverpool. *Trumpeters*.—First, D. Thwaites, Cheshire. Second, A. Cattley, York. Highly commended, G. W. Hartley, Kendal. *Jacobins*.—First, T. Elbington, Beverley. Second, J. J. W. Murray, Langholm. Highly commended, D. Thwaites, Cheshire; J. W. Edge, Birmingham. *Any other variety*.—First, G. Goore, Liverpool. Second, J. W. Edge, Birmingham. Commended, I. Monkhouse, Kendal.

EXTRA STOCK (not for competition).—Highly commended, G. C. Whitwell, Kendal (Dorking and Cochin Pullets). Commended, J. Hully, Kendal (Black-breasted Red Game Pullets).

Owing to Mr. Hewitt having been suddenly taken ill, the Committee were compelled, at the last moment, to alter their arrangements. They are happy to say that they obtained the services of Mr. Challoner, of Chesterfield, who acted as Judge in place of Mr. Hewitt.

PREVENTING SWELLED FEET IN DORKINGS.

I WAS some time since a serious loser by a complaint which my fowls suffered from for many months without my being able to discover the cause of it; and as it may be just possible that some of your readers may have been annoyed as I was, I venture to hope that you will allow them to profit by my experience.

My birds (Dorkings) were constantly subject to swelled feet. At first a little speck would appear on the ball of the foot; then the foot would get puffy; then inflammation would set in, and soon the foot would burst, and appear to fester in a most terrible and offensive manner.

I wrote to your valuable paper for assistance and advice, and you then kindly inserted my letter, describing the disease, in your columns. You advised me to look to the perches in the poultry-house, and to treat the diseased feet in such and such a manner. However, I found no decline in the complaint. At length I wrote to Mr. Baily, of Mount Street, in the hope that in the course of his wide experience he might have met with some cases similar to mine, and might also be able to point out or suggest a probable cause. Fortunately for me I described in my letter to him everything connected with my yard, house, &c., and amongst other particulars I mentioned that I had an asphalt floor laid down in the roosting-house; but that, as the

perches were only eighteen inches from the ground, the hardness of the floor could not possibly be the cause of injury. He wrote back immediately, advising me to remove the asphalt (of which I was not a little proud), as he considered that to be the cause of all the mischief. I did so, much against my will, and since then I have never had a single case of bad feet in my yard!

My object in laying down asphalt was to promote cleanliness, and to keep out rats; but I have no doubt that after repeated scrubbing a good deal of the tar got washed away, leaving the points of the gravel stones (of which the composition is made) sticking out sharply, the little stone itself being still immovably imbedded in the composition. These little points penetrated the feet of the birds, and the little wounds probably became poisoned or irritated by the tar, and thus soon a bad and an incurable sore was established. Now I know that there is great fashion amongst many poultry-keepers just now for having these asphalt floors; they are as clean as brick, and have the advantage of being dry and warm, and of keeping out rats completely. Let them, however, take warning by me, and have them either picked off, or at least covered with five or six inches of loose gravel or road sand.—REV. E. C.

EGGS IN WINTER.

ON so important a question as "How is my wife to get eggs enough?" the testimony of any one who has succeeded will, no doubt, be worth communicating.

Last spring twelvemonth I retired from London to a snug country cottage, and set up my poultry-yard with five hens and a cock, common barndoor fowls. They laid 180 eggs up to October 20th, and then took a month's holiday, beginning business again on the 20th of November.

On the 30th of November the pullets began to lay, and at the end of the year I had a stock of seventeen hens and two cocks. The eggs produced this year have been as follows:—

| | | | |
|---------------|-----|--------------------|-----|
| January..... | 247 | July..... | 110 |
| February..... | 264 | August..... | 123 |
| March..... | 234 | September..... | 125 |
| April..... | 114 | October..... | 75 |
| May..... | 121 | November..... | 33 |
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I have reared about 100 chickens, and have now about a dozen hens and pullets, besides chickens fit to kill. We are taking about three eggs a-day on the average, and I have many applications for them at 1s. 6d. per dozen from neighbours whose fowls do not lay at all.

I believe the secret is to keep pullets, and keep them well. My fowls have the run of a field and orchard; the pickings of the rabbit-house, and as much corn, rice, and barley meal as they can eat. The chickens are never put up to fatten; they are always fleshy enough, and the delicacy and flavour of their flesh are admired by all who taste it.

Does it pay? I do not keep fowls for profit; but the produce of eggs and chickens pays for the keep, and leaves a small margin. I reckon nothing for rent or attendance, as I pay nothing extra on that account.

With regard to rice. I never let the fowls pass a day upon rice alone; but they prefer it to almost any other food.—THEODORE COMPTON, Winscombe, Somerset.

ITALIAN BEES.

BEING one of a Committee of three, chosen by the Apian Convention last spring, to receive the Italian honey bee from our government agent for cultivation in its native purity, I take this method to report, that the bees imported by that department (the Patent Office) were all dead, and the enterprise would have proved a failure had not the agent made a further importation on private account. I am happy to inform your readers that the Italian bee has been introduced into some of our first apiaries with every hope of success. It will also be interesting to all to be informed that what was hoped for then seems to be fully realised. My own observation will warrant me in saying that the queens are more prolific, and that the workers are more hardy and industrious than the native bee.

On the 17th day of August last, I introduced an Italian queen bee into one of my moveable comb-hives with the native workers, removing the native queen, and leaving four frames only. I have added eight frames since, from time to time. On the 15th day of October, I find the swarm completely Italianised,

howing that the queen in less than two months had produced swarm of Italian bees. The native bees seem to diminish in numbers as soon as the Italian queen is introduced. My native bees did not die of old age in the above time, and I am led to the conclusion that the Italians destroyed the native brood, and expelled them from the hive.—W. A. FLANDERS, in *Ohio Farmer*.

[I have never myself found that Ligurian bees expelled the common species or destroyed their brood, when an Italian queen has been substituted for a native one; but Mr. Alfred Neighbour informs me that his endeavours to strengthen an Italianised stock by introducing brood-combs of the ordinary species, have been frustrated to a considerable extent by the Ligurian bees destroying a great part of the young brood thus committed to their charge.—A DEVONSHIRE BEE-KEEPER.]

EFFECTS OF FROST IN BEE-HIVES.

LIKE most insects bees are very susceptible of cold; stragglers from a hive, disturbed during the prevalence of sharp winds, may be seen to get benumbed at a temperature of about 40°, and yet, within the hive, they possess the power collectively of resisting extreme cold with comparative impunity. During winter they usually enjoy a comfortable dormancy, till the external atmosphere gets somewhat below freezing; they then shake off their lethargy, and by augmented respiratory action endeavour to keep up a moderate temperature within. Increasing cold animates to the putting forth increased effort. The gentle hum heard at first gradually rises in a strong hive to a loud roaring, like the sound of distant waters. A thick vapour pervades the hive, and, condensing, trickles in drops down the back windows. These are subsequently pounced on by Jack Frost, as the canvass on which he delights to depict his many beautiful vagaries. The windows of my hives are at the present moment completed efforts from that old master's studio.

We Northerners awoke yesterday morning (Dec. 24) to find in the comparative shelter outside the parlour window the temperature at the bracing point of one degree below zero. The mercury shrunk within the tube-balls of the thermometers placed at the back windows of my hives, all, with one exception, being indexed no lower than 28°. In the exceptional case (a wood and glass observatory, placed snugly in a staircase window, and "well hopped up"), the temperature had sunk as low as 7°, or 25° below the freezing-point.

Now, as I am somewhat anxious as to the fate of my little favourites, and the wholesomeness of their frozen stores, perhaps you may counsel me, or call in the aid of some such able correspondent as Mr. S. B. Fox, to favour your readers with a paper on "frost and its effects."—A RENFREWSHIRE BEE-KEEPER.

NEW BOOKS.

THE MANAGEMENT OF BEES.*—Under this title we have a little pamphlet exceedingly well printed on good paper at a very moderate price, and containing rules for bee-management, which are stated to have been "proved successfully in a sixty-years experience of an apiary, sometimes containing above two hundred hives, and in a climate nearly as variable as that of Scotland." Eschewing scientific details the author confines himself to the practical elucidation of a system of super-hiving combined with swarming, which does not differ very materially from that so ably explained and advocated in our pages by the late Mr. Payne. We must, however, take exception to some of the details which might, probably, cause inconvenience and disappointment to any one attempting to carry them out too literally. For instance: Straw hives two inches in thickness might answer very well; but what shall we say of two-inch wooden boxes, except that they would be so heavy as to be altogether unmanageable. Whilst deprecating the destruction of bees for the sake of their stores, Dr. Mackenzie can point to no better mode of uniting stocks than the old-fashioned one of fumigation, or still worse, the more modern and destructive chloroform. Experience having rendered it more than doubtful whether either of these methods possesses any real advantage over the usual brimstone pit, it is rather singular, that the process of driving which is recommended by our author for making artificial swarms is altogether overlooked as a means of uniting weak stocks in autumn. We are also rather surprised to find sugared ale again recommended as food for bees, after having been, as we consider, very deservedly

exploded. A centre hole of an inch diameter is not sufficient communication between a stock-hive and its super; whilst 3s. or even 2s. a-pound is far more than honey-producers generally can expect to realise. It is not without regret that we notice these defects in a treatise which, in other respects, would appear well adapted for the information of those for whose perusal it is intended.

LIGURIAN BEES IN SCOTLAND.

THE following letter from the Scottish correspondent to whom I sent the only Ligurian queen bee, which I parted with during the late season, may be deemed interesting. Although I had considerable doubt as to the queen being pure-bred, the bee which accompanied this letter appears a well-marked Ligurian, whilst the variation of colour noticed in different individuals is, probably, not greater than I have perceived in my own hives. With regard to the concluding inquiry, I may state that I hope to commence next year with eight Italian stocks, and that I anticipate a much greater degree of success in the artificial multiplication of Ligurian queens than has hitherto attended the efforts of—A DEVONSHIRE BEE-KEEPER.

"10th December, 1860.

"Dear Sir,—Agreeably with my promise I enclose one of my Ligurians, in order that you may judge of their purity. I perceive a considerable variety among them, some being lighter than others, and I also see that some have the orange stripes broader than others in the same hives. I am glad to inform you that they still appear both strong and healthy. As they were heavy enough for keeping without artificial feeding (a rare occurrence last autumn), I have not fed them, with the exception of a few feeds for the purpose of encouraging breeding. So far as I have had an opportunity of judging I am of opinion that they are more hardy than our original variety, as I find them often going abroad when others in the same position are all quiet. I suspect it will be somewhat difficult to keep them entirely shut up during a snow storm.

"The heather season was nearly a failure, as, in most instances, the hives came home lighter than when taken away; consequently our stocks here are generally very light, but by feeding I hope to keep up my stock, although I certainly do not expect all I have kept to come through. How is your stock of Ligurians thriving?"—J. S.

OUR LETTER BOX.

BRAHMA POOTRAS (X. X. X.).—Brahma Pootra fowls wander from home much more than Cochins, but they are not in the habit of staying away to lay. They may be kept in confinement easily, even in a very small place. We always find it difficult to give advice about selling, as certain neighbourhoods offer greater facilities than others. It is perfectly legal to exhibit bought chickens.

LOSS OF FEATHERS IN A COCK'S TAIL (E. C.).—It is perfectly true that a feather pulled out of the tail of a cock or hen will grow again in a short time. The loss of both sickle-feathers would be a great disadvantage to a bird, but it would not be a disqualification.

MOOR HENS (R. I. W.).—Moor hens will not remain on a spot unless they are pinioned and confined by a fence. It is then sometimes difficult, as they are good climbers. The places where they remain are close rushy spots, overrun with rank water vegetation. Gulls would be useful for your purpose; but they, like all others, must be kept hungry, and that is difficult, as their appetite is not always discriminating.

CRYSTAL PALACE POULTRY SHOW.—In our No. of December 18th, in the article "Crystal Palace Show," a commended pen of Duckwinged Game Bantams, exhibited by Mr. Wm Ballance, Mount Pleasant, Upper Clapton, is by mistake attributed to Mr. Ballance, Taunton, Somerset. (C. Atkins).—In our report of the Crystal Palace Show we unintentionally stated that the Commendation for Spanish was awarded to Mr. Adkins, of Birmingham, instead of to Mr. C. Atkins, of Thames Bank, Pimlico.

WATTLE OF COCK INJURED (Banker).—The wattle of a Dorking cock cut by fighting is not a fatal objection. It is merely a disadvantage, and not a serious one.

DISEASE IN PIGEONS (W. T. R.).—The disease among your Pigeons is, most likely, canker. If the lumps of pus can be got at, remove them and touch the place with caustic. I am much inclined to think that mice wetting among their food is a frequent cause of this complaint among Pigeons. Beans are considered the best food for Pigeons; but I think a little wheat should be given in the breeding season by way of change, and also because beans do not readily make soft meat. Filling between the joists with sawdust has been recommended for deadening the sound. In some parts a light kind of sun-dried brick is used, called, I think, abode bricks, to keep out mice. See that the floor and skirting are sound and close. Making the roof white outside would keep the loft cool in summer. Lath and plaster over the rafters would make it warmer in winter.—B. P. BRENT.

STEWARTON HIVES.—An Amateur Hivemaker will be much obliged by "A RENFREWSHIRE BEE-KEEPER" saying if it is correct that he has only seven bars in a Stewarton hive, thirteen and a half inches square? Also, what is the width of each bar; where he purchases his Stewarton hives, and what is the price.

* *The Management of Bees*, By Dr. Mackenzie. Edinburgh and London: Blackwood and Sons.

WEEKLY CALENDAR.

| Day of M'nth | Day of Week. | JANUARY 8—14, 1861. | WEATHER NEAR LONDON IN 1860. | | | | Sun Rises. | Sun Sets. | Moon Rises and Sets | Moon's Age. | Clock before Sun. | Day of Year. |
|--------------|--------------|--------------------------|------------------------------|-----------|-------|-----------------|------------|-----------|---------------------|-------------|-------------------|--------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | |
| | | | | deg. deg. | | | m. h. | m. h. | m. h. | | m. s. | |
| 8 | Tu | Snowdrop. | 30.294—30.244 | 46—2 | S.W. | ·02 | 7 af 8 | 8 af 4 | 3 af 6 | 27 | 7 7 | 8 |
| 9 | W | Helleborus hyemalis. | 30.233—30.083 | 47—2 | S. | — | 6 8 | 9 4 | 1 7 | 28 | 7 32 | 9 |
| 10 | Th | Tussilago fragrans. | 30.162—30.134 | 42—3 | N. | — | 5 8 | 11 4 | 47 7 | 29 | 7 56 | 10 |
| 11 | F | Laurustinus. | 30.125—29.982 | 43—3 | E. | — | 5 8 | 12 4 | sets | ● | 8 20 | 11 |
| 12 | S | Cape Heaths. | 30.045—30.028 | 45—3 | E. | — | 4 8 | 13 4 | 59 a 5 | 1 | 8 43 | 12 |
| 13 | Sun | 1 SUNDAY AFTER EPIPHANY. | 30.129—30.071 | 42—3 | S.E. | — | 3 8 | 15 4 | 14 7 | 2 | 9 6 | 13 |
| 14 | M | Ceanothus azureus. | 30.032—29.899 | 45—3 | E. | — | 3 8 | 16 4 | 25 8 | 3 | 9 28 | 14 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 41.6° and 31.0° respectively. The greatest heat, 54°, occurred on the 12th, in 1852; and the lowest cold, 4°, on the 14th, in 1838. During the period 133 days were fine, and on 105 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

Now that the frost has left us, it is advisable to look over and to remove all parts of Celery or other vegetables that have been much affected, which will not only prevent what is left from rotting, but free the garden from an unsavory nuisance. *Asparagus*, make up a bed as wanted. The old plan of taking up the roots and planting them in a frame is very good, at least, thus early in the season. *Cauliflowers*, give plenty of air to plants in frames and under hand-lights, sprinkle wood ashes amongst them, they protect the stems in severe frost, and slugs do not like them. *Potatoes*, plant a quantity of an early sort in pots for forcing. They succeed best when started in rather a low temperature. Where *draining* is necessary, now is a good time to get on with it, the very worst soil and situation can be improved by drainage, and wall trees of all sorts can be rendered fruitful by artificial borders. Now is also a good time to keep burning and charring all the prunings of trees, shrubs, rubbish, sawdust, &c. Charred earth and wood ashes in good doses have a wonderful effect in restoring fertility, and keeping grubs and slugs in check.

FRUIT GARDEN.

Thin out the branches of old Apple, Pear, and Quince trees where too crowded, and scrape off moss, lichen, &c. Apply with a brush a thick paste of lime, soot, sulphur, and soft soap to the stems of young trees, to prevent hares and rabbits from peeling them.

FLOWER GARDEN.

After the late frost and snow but little can be done here at present except where alterations are going on, and then the trenching of ground for planting may be proceeded with, but it will be advisable to keep the frozen or snow-saturated surface at the top, for if thrown into the bottom of the trenches it will remain cold for a long time. Keep the walks and grass as neat as possible to compensate in some measure for the want of flowers at this dull season. Look over the beds of Pinks and Pansies. Plants that have but lately been removed are very liable to be raised by the frost, these must be carefully fastened by pressing the soil gently about them when it is tolerably dry. Carnations in beds to be also carefully examined, and, if loose, to be fastened and cleared of dead leaves, which when lodged on the plants are injurious to them.

STOVE.

Although all the plants now at rest will require to be kept dry, they will also require to be looked over frequently to see that they do not suffer for want of water, especially those near the pipes or flues. Orchids may be potted, fitted in baskets, or tied up to logs at any time, or when out-door work cannot be done. The temperature to be about 60° by day and 50° by night.

GREENHOUSE AND CONSERVATORY.

The temperature of the greenhouse not to be raised much
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above 40°, the watering to be done early in the day, and the plants to be frequently looked over to keep them free from dead leaves, insects, or soddened mould in the pots. Keep the conservatory at a temperature of about 45° by night, raising it to 55° in the day, with plenty of air at every favourable opportunity. Remove flowers as soon as they become shabby. Stove plants will take no injury for a few days in this temperature, but hard-wooded greenhouse plants, such as Heaths, should not be retained more than a few days in such a temperature. If not already done, prune, train, and clean the creepers on the rafters, &c.

FORCING-HOUSE.

Remove the plants from this house to the conservatory as soon as the flowers expand, and introduce others for succession, placing them first at the cool end of the house so as to excite them gradually. Maintain a fresh-growing moist temperature from 60° to 65°, give air warmed before it gets to the plants at every favourable opportunity. Keep up a moist atmosphere unless the weather is very dull.

PITS AND FRAMES.

If the young stock in these structures had been protected from the late severe frost, they may now receive all the air and light possible in fine days, and attention to keep them free from decayed leaves, drip and damp. Abundance of air to be given to Mignonette and Violets when the weather is favourable. Auriculas in frames to be watered occasionally in fine weather, being careful to remove any water that may be lodged in the heart of the plant which at all times has an injurious effect.

W. KEANE.

DOINGS OF THE LAST WEEK.

THE frost on Christmas night though severe, was not within a long way of that on Christmas eve. On Wednesday the weather was much milder, and a light skiff of snow during the night kept the thermometer only a few degrees below freezing, but at daybreak on Thursday, and on to ten o'clock, it rapidly fell to 16° and 18° below freezing. Snow a few inches on Friday, and more on Saturday, and gradual thaw with south wind on Sunday and Monday. To-day (Jan. 1st) heavy mist, with the wind again in the north, and every prospect of clearing up for frost again. The precautions used have saved the conservatory from frost. No cold pits have been uncovered. I have merely peeped into them and feel sorry to state that I fear the *Calceolaria amplexicaulis* is much injured from deficiency of covering. I once was served in the same way ten years ago, and since then before this year I always housed that tender kind, where there was the means of giving a little fire heat in severe weather. I was just delaying until the most of a late crop of Grapes should be cut to get room for doing so. With plenty of litter I could have saved them easily; but people near London can form little idea how scarce—nay, almost impossible, it is to get anything of that kind you want in a hurry in the country. The frequent turning of the little litter, and the few skiffs of snow will make all other things pretty right. If the frost continues we must try and have a little more covering, and continue breaking and turning the surface. We know that with the above exception everything else is pretty safe, and, in cold pits of brick or turf,

will have no chance to grow or elongate when close to freezing-point, that even if a thaw comes we shall be in no hurry uncovering for several days. If the plants under such circumstances have a night of several weeks they will be none the worse for it, especially if pretty dry beforehand. Cauliflower fit to cut, and in cold earth-pits covered with glass, and half as much litter as the Calceolaria above referred to, have been, and are, all right, and along with Sea-kale, Turnip-tops, Rhubarb, Mushrooms, &c., from the Mushroom-house, have been useful at this season. Asparagus grown in a fermenting bed is too white to be pleasing to the eye, showing that to have it nice and green in all weathers in winter, it would be advisable to grow it where fire heat could be given. The plants in pots were carefully watered where wanted, and in severe nights the pits and houses received a little protection from mats, and straw hurdles, which rendered strong fires unnecessary. All amateurs who like to see their little pet plants and bedding stock in all weathers, should manage to have their houses heated by some simple means. I rather think it would be the cheapest and surest plan in all cases, using covering only in severe frost. Cold pits are, no doubt, the cheapest, where plenty of litter is to be had, but if that is to be obtained in some districts it will cost a great deal more than the little fuel that would be wanted. Verbenas that had been struck in the smallest 60-pots, as thick as the cuttings would stand, have been transferred without moving the drainage to 48's, that the plants may get strong for cuttings in a month's time. Vines in narrow pits have had a little heat applied; and wheeling, making covers, and preparing for slight hotbeds, and keeping walks clean, have been the routine operations, care being taken that the plant-houses were as cool as compatible with safety.—R. F.

THE SEASON—WINTERING PLANTS IN COLD PITS.

THE year 1860 went out of London through a flood of mud, and enveloped in a disagreeable mixture of Scotch mist and London fog. So 1861 came in, amid the same mixtures and conditions; yet Christmas was as sharp as in the old times. But look to the weather-glasses; surely there are as many species in their genus as in any of the botanist's making, and quite as true, for no two of them indicate the same degree of cold in the same street or garden.

Your glass, of course, like mine, is quite right, and never varies, or was known to fail in a push like that of the last fortnight of the last old year, but everybody else's glass is just like half the world now-a-days, and you know what they are without being told. No frost can now be booked without a debate about the exact species of "glass," the authority on which it is "identified," the exact position it should hold in the "arrangement" of this or that theorist, to say nothing of the dissertations on the subject whether the "glass" be "mercury" or a "scale."

Here, in Surbiton, on the average of the last ten years, we are three half degrees warmer during frosty weather than at Chiswick Gardens, unless the wind is fairly from the east, when we have the advantage over them of from three to five degrees, according, as it seems to me, to the force of the easterly wind. This Christmas frost with us was notch for notch with what they registered in Chiswick Garden, except on Christmas morning, when they were half a degree colder, but that, or as much more, might arise from the position of the thermometers and the way they were hung up. They count from a foot above the surface of a bare, exposed piece of ground. My glass is forty inches from the ground, to save me stooping so much, and the place is partly sheltered by garden-walls and houses in the neighbourhood.

My aim has nothing to do with registering the weather, but to know how to look after my plants, my cold pit being within a yard of my thermometer, which is Negretti & Zambra's register. The frame of this instrument is a composition of metal, which some of my philo-

sophical friends predicted would be liable to cause it to indicate too much cold; but that has not been the case hitherto, for I compare it weekly with Mr. Thomson's tables at Chiswick. To indicate truly, this, and all other thermometers, ought to be suspended in free space, not leaning or touching against a wall or fence, or anything; and more particularly this that I use. The lowest point I noted was down to four degrees above zero, or twenty-eight degrees of frost, and then there were two inches depth of snow on my pit: under that not quite two inches of, say, common sawdust, so that all may understand the thing, which was really this cocoa-nut refuse you hear so much about.

Well, two inches of dry sawdust over plants keep out more cold, or keep in more heat, than three new Russian mats; and an inch of snow is a safer covering than two inches of dry sawdust. That hardest morning I swept a quantity of snow on against the front and ends of my pit, and threw a quantity more snow on the covering at the more exposed end. I am writing on the fourteenth day that my pit plants have been in total darkness, all but one light at one end, which I opened to see the state of the plants, and shut two hours afterwards. There was not a single leaf pinched, as far as I could see, and nothing could be more healthy-looking than the young leaves; yet the first two courses of bricks under the glass at the back were frozen hard, having been hardly dry for the last six months before the frost. Boards, or turf, are far better for cold pits than bricks in England or stone in Scotland; and the turf off peaty moors or commons is just as much better than the turf from sandy loam.

Now, you see a grain of practice is worth more than the adage puts to a bushel of theories; and if I can keep three thousand seedlings in a cold pit without flue, or pipe, or heat in any shape, in such a frost as that and down to zero, as I have just done and told you, is there any reason why you and they could not do the same under similar circumstances now that you know the way to do it? There are thousands who could see no reason why you should not thus succeed; but I can see where many more thousands could no more keep such plants than they could fly—they want my "grain" in their "bushel." All the learning and all the education in the world will not avail a man who wants a practical knowledge of what he takes in hand to do; and as there is no way by which a man's practice can be tested before he sets to work, all the tests of efficiency by education may turn out in empty bushels. No gardener, however, knows the value of education and the want of it better than I do. The best test of education, and the best lesson I heard on practical education for the last ten or twenty years, was that bursting of the boiler for the conservatory which "R. F." told us of last week. When energy, education, and practice go hand in glove, as they did in that instance, to keep off the frost or any other dangerous thing, you see what is aimed at by those who would make scholars into clever men, if the men had sufficient energy and fair practice to make their schooling bear on the nature of their calling: therefore, the first and great object which I would hold up for the aim of the amateur and young gardener is energy—that is, a prompt application of the mind and body to do everything on the instant, to do it as well as he can, and to try to learn something else from that doing. If you have to count the straws in a bundle, do it with all the force or spirit you can put in motion, as if you were engaged in the greatest enterprise, and then you may not rise at first to the height of energy. If he cannot see a better way of counting the last straws in the bundle than he thought possible at the beginning, the energy of his mind was asleep the while, and a busy-body merely will never make a man of energy. It is just the same with education. The tongue may be taught to speak wisely, yet knowledge without energy is dead—or a great deal worse. Knowledge without energy will only make a man ten times more lazy: therefore practice to

learn energy first, and then stick to it; and if you do you will get your reward—we shall all trust you with education, which, with your energy, will make a man of you at last.

Now, to practise as we preach, or what is said, we shall have more frost this winter to guard against, and more plants and cold weather in the spring: recollect, therefore, that my way of treating my seedlings may lead you astray, unless you understand the circumstances which rendered my practice safe. Unless your pits or frames are as dry as mine, you will be in great danger if you keep them so long from air and in the dark as I have done. The long confinement in a damp state, or any state approaching damp, will be more against them than the want of light. But give your pits as much air and as often as the cold will permit; and do not water the pots, no matter how dry they may be, till you are sure of dry weather, and you will be safe. Every time you open the glass search after any damped leaves and pick them off; for if any part of the plants gets mouldy the next frost will be worse for them than the first, though it may not be nearly so severe. When a pit gets so damp as to threaten harm to all within it in such a trying season as this, the only way to stop the damp entirely is by artificial heat; and the best form of applying it in such cases, where neither flues nor pipes are in use, is by burning embers of wood, or with charcoal in some open vessel. I have seen an old watering-pot used in this way, suspended from the middle rafter of a four-light pit. It was half filled with burning embers from the greenhouse fire, and lasted hot several hours; and in two or three days the inside of the pit was sufficiently dried to stop all appearance of damp for the rest of that winter. Nothing is more simple or better for the purpose than this, and nothing is more likely to be at hand than an old watering-pot past use: but have an inch of cold dry ashes under the fire to keep the soldering of the bottom from melting; that on the side of the pot will do no harm even if it melts.

Nearly all the contrivances you may have heard of for helping to keep a pit warm on very cold nights are worse than useless—I mean such as jars full of hot water and the like; for unless a little air is left on at the back end of the lights the whole time, to let off the vapour which the extra heat is sure to raise where there is damp earth, you will only cause the plants to grow the more, and so make them the less able to stand the next frost. Nothing is so good for really cold pits as a thorough covering.

For soft-bedding plants in greenhouses, or pits with flues or pipes, there is a very common error in not lighting the fires on fine frosty days till after the place is shut up for the day, or till the air is taken off. This is just what causes the fly to be troublesome in the spring. The plants are, in a degree, thus forced the whole winter, if it is hard, and fine leaves and soft tops are obtained to no other purpose than to furnish early food for vermin. All the fires ought to be lighted early in the afternoon in frosty weather, and the pipes or flues ought to be so hot as to do the work that night before the air is taken off, and after that to be kept up to that heat, and no more till next day. The expense for coals need not be greater by this better practice, and if it were, the more firmness and the better ripening of the young wood in the spring, and the less liability of the plants to the attacks of insects would make up for the difference.

The whole winter management for bedding plants should be to give them as little artificial heat as will keep the frost from them and no more, and just as little watering as will keep them from actually drying up at the roots.

The plan which is forced on me by the position of my house for plants, by which they are too often warmer at night than in the daytime, may be useful for a few who may have to keep their plants in kitchens or anywhere about the dwelling-house; but, as a rule, the practice

ought to be avoided as much as possible. The way that I manage to balance the practice with Nature, is to keep such plants much drier than usual. When a plant is dry at the roots, a little extra heat even at the wrong time will not cause it to grow so much as another which is regularly watered, if it gets more day heat than is just sufficient to keep off the frost. Or in a more easily-to-be-remembered maxim, every inch of growth made by such plants during a hard winter by artificial codling, is for the fly and not for us. If we kept this in mind we should be more cautious in using the means which induce growth at such seasons and act accordingly. In my young days, the pride of gardeners, or of most of them, was to have their plants as fresh looking after a long winter as they should have been in summer; but their summer growths then were such as would make us now blush. But there is another point of view from which this question might, probably, be discussed. In the olden times many plants were found to be hard to strike from cuttings, to be very difficult to rear if they did root, and in a few years to “run out” altogether, and be lost to that collection. The reason of that was mainly owing to the winter management, the growth was not after Nature, the cuttings had no heart or stamina to stand the propagation, and the plants which did root had to go another stage on the wrong journey. The cuttings from them were less hearty than the last, and in the process of time the “run out” period overtook them and away they went. These old tales are not yet quite told out. We occasionally hear of very easy plants to do not doing at all, and if they grow they are constantly attacked by all sorts of insects. No cuttings from them ever make good plants, and in a few years they are clean gone; but the basis of the evil, the bad winter management, is too deeply rooted to be seen through without long practice and observation.

D. BEATON.

A MODEL SUBURBAN GARDEN.

HAVING benefited much by reading *THE COTTAGE GARDENER*, I have sometimes thought it might not be uninteresting to some of your readers to learn how far the principles you advocate may be successfully applied and carried out in a small garden. I believe that amongst the numerous readers there are many who, like myself, love gardening for its own sake, following it not for profit, but from a taste for flowers, &c.; but who at the same time like to see some return for the time and money they expend.

If they can learn anything from the details of my experience I should feel gratified. My garden, a small suburban one, where land is very dear, is 150 feet long by 40 feet broad, running from north to south, or slightly inclining to S.S.E. Walled on the north and west, and divided from my neighbour's on the east by the gable of a house and espalier palings; a hedge is the south boundary.

A narrow border, used principally for striking cuttings and raising seedlings, runs by the east wall, and a walk 3 feet wide goes round on one side not exactly parallel with the fence, but forming a long angle $7\frac{1}{2}$ feet broad at the widest end. It is laid out thus:—The plot under the wall facing south (allowing for the walk), the width of the garden and 30 feet long, is appropriated to vegetables.

The next plot, about 40 feet long, is in flowers. Another, 30 feet long, in vegetables. The remainder in fruit.

I will take the portion for flowers first. It is laid out in three beds 20 feet long by 4 feet wide, with a border surrounding. The walks between the beds 2 feet wide.

The borders on the north, east, and west are filled with herbaceous plants, bulbs, and annuals, care being taken to grow only good ones, and those I like. The south border contains about twelve tall or standard Roses and thirty dwarfs.

I dispose of the three beds thus:—Two always in spring in Pansies, planted one foot apart each way. In June, between each row, I run up in one bed German Stocks, in the other Asters. By the time the Pansies are done blooming, the annuals are in perfection, or approaching to it.

The other bed is planted in February with Ranunculuses; and when their beauty is over, the bed is filled up with Scarlet

Geraniums, or other half-hardy plants kept ready in pots. By this mode—though the only glass I have is a common frame—I keep a constant succession of bloom.

The two plots kept for vegetables are divided into four parts: one planted with Strawberries (perhaps this is an Hibernicism), two are apportioned to early Potatoes, the other to salads, spring Cabbage, &c., changing the crops often. I never attempt to grow Carrots, Onions, Parsnips, or any roots of that description, which you can buy as well, and not many Peas. I plant only those vegetables which require to be used fresh, and will allow a second crop. When they are off I follow with Celery, Kidney Beans, Winter Greens, a few Turnips and Leeks for soups, cropping all, except the Strawberries (and occasionally I have Lettuce between them), twice.

As for fruit, besides the Strawberries mentioned, I fill up the angle with them, and by the advice of a friend, one of our most skilful professional gardeners, I have made a rockery between the first plot and the flowers, and planted it with Keens' Seedling, Sir Harry, and others. This is 30 feet long, the centre 34 inches high, sloping to the south about 36 inches, to the north 50 inches; by this arrangement getting sun on the north side. To make this it took seven loads of strong turf, rotted, and five loads of stones. It contains between 400 and 500 plants. It was made last summer, is very ornamental, and from the appearance of the plants promises to be profitable. An Apricot, Kirke's and Reine Claude Plum, with a root-pruned Glou Morteau occupying the south-aspect wall. On the one looking east are two Victoria Plums (though young trees they had fourteen dozen last year on them), two May Duke Cherries, one Winter Nelis and one early Pear, on a gable; and the rest of the wall is taken up with twenty-three Currants. On the gable looking west is a Louise Bonne and Easter Beurré; the espalier fence is covered with trained Raspberries. I erected a light wire fence 5 feet high between the Rose-border and the next plot, and turning also east, I have seven root-pruned Pears on it. Running down the west side of the garden, one foot from the walk, is a low trellis 30 inches high, on which are trained twenty-three Currants, each stem 8 inches apart, and closely spurred in, as recommended in your manual "Fruit Gardening for the Many."

A slight division is made in our vegetable plot by planting one pyramid Pear and two Apples, filling up the line with Currants, also on that system. The rest of the garden, save a plot of twelve roots of Victoria Rhubarb, six of which are forced alternately, is taken up by twenty-eight Gooseberry and Currant trees, a pyramid Pear and Apple, and a Victoria Plum, the two last trained, I think you call it, *en quenouille*.

All the trees except the root-pruned I planted as advised in your first and second volumes. To sum up, there are in this small spot one Apricot, two Cherries, five Plums, fourteen Pears, four Apples, sixty-one Currants, twenty-four Gooseberries, and about 60 feet of Raspberries on espaliers, and *there is no shading*, besides above forty Roses and a large quantity of Strawberries. The trees are young, many of them bore well last year, though the fruit, from the cold summer, was not well flavoured. To produce this result requires a considerable quantity of manure and fresh soil; the last I can readily get, and use it freely.

To keep the trees small the system of root-pruning, recommended by you and Mr. Rivers, is pretty closely attended to, and with good results.

I fear I have trespassed too much on your space; but I thought perhaps at this dull gardening season (the snow is now 12 inches deep here) you might have a little room to spare, if the contents are worth printing.—*South Durham*.

FRUITS OF 1860 AT BURNTWOOD GRANGE.

(Continued from page 61.)

MUCH more might be said in favour of the *Musa Cavendishii*; but I must reserve it to a future day, when I hope to give a much lengthier description of it, with the mode of treatment it will receive here, which will cause it to be of a much dwarfer habit than at present, and without detriment to either the size of its foliage or the weight of its fruit.

From this we must now pass to quite a different species of fruit, although it stands on equal terms as to rareness, but differing as widely in the size of both foliage and fruit from the former as the Lilliputians did from the Brobdingnags.

I allude to the *Eugenia Ugni*, which is a highly fragrant delicious fruit. But this has its drawback, and only one—the

smallness of its fruits: this deficiency, I firmly believe, will be surmounted ere long. As an ornamental plant it is quite as handsome in foliage as any of our Myrtles, although not quite so fragrant when in bloom; but its elegant Campanula-shaped flower is quite as pleasing to the eye as the blooms of its twin sister the Myrtle. And when its fruit is ripe the above-named plant has not the remotest chance to cope with it, for it is impossible to adequately describe the fragrance of this recent acquisition to our fruits. Here it has been the most attractive plant of the conservatory for several months, and certainly not without deserving it. It is about two feet six inches high by three feet in diameter, and something the shape of a well-grown Scarlet Geranium. By-the-by, this is just the kind of style in which this plant should be grown to make a good specimen. Recourse must be had to stopping, or what is called pinching back the shoots. If this is not commenced when the plants are young they will become similar to two that were exhibited at a great public exhibition of fruits this autumn—their branches few and far between, just like the sunny days of this past summer have been.

It is of such easy culture that any cottager might keep it in his window through the winter months, provided it was saved from the frost. The treatment that will do for the Myrtle will do for this plant as well. A rich soil, with plenty of air and moisture given through the spring and summer months will insure an abundant supply of flower and fruit. Cuttings struck early in the spring and potted off into 90-pots, then placed in a gentle heat until they are well rooted, and inured gradually to the open air. In June they will require another shift, and in the March following a rather liberal one, when they will both bloom and fruit well that season.

I cannot see why they should not be grown in the west of England out of doors in the same manner that Myrtles are—trained to a wall, but covered in the winter with thatched hurdles, so as to protect them from some of the severest frosts.

Melons come next in rotation, which this year have been very good here. My favourites are Turner's Scarlet Gem for scarlet fleshed, and a cross between Carter's Excelsior and the Beechwood Melon—two free-setting, highly delicious varieties, the latter of which is green fleshed. Those grown on dung-beds were finer and much richer in flavour than those that were grown in the hot-water pits. The reason why they were so I must state in a separate article.

Our wall trees, one and all, were overabundantly supplied with fruit. The wall was a perfect picture from one end to the other. It is nearly 100 yards in length, 12 feet in height, and with 18 fine trees growing against it, which cover seven parts out of eight of the south side of the wall: 6 Peach, 6 Nectarine, 5 Plum, and 1 Moor Park Apricot. We commenced gathering from the last-mentioned tree Sept. 10, and finished gathering Oct. 11. The number gathered was twenty-nine dozen.

The Peaches are Late Admirable, Early Newington, Noblesse, Royal George, Salway, and Vanguard. We commenced gathering Sept. 7, and gathered the last on Oct. 26. Number gathered, fifty-seven dozen, being nine dozen and a half per tree.

Of Nectarines we have the following kinds:—Elruge, Early Newington 2, Pitmaston Orange, Violette Hâtive, and New White. We commenced gathering Sept. 7, and gathered the last on Oct. 17. The number gathered from the six trees was fifty-two dozen, or eight dozen and eight per tree. Total from twelve trees, 109 dozen.

Plums were equally abundant; for from the five trees there were above 100 dozen gathered, besides what were used for culinary purposes. They consist of the following kinds:—Green Gage, Magnum Bonum (white), Orleans (Smith's), Purple Gage, and Washington, each of which seemingly vied with the other for the mastery; but, as I have above stated, through the sunny days of this summer being so few and far between, there has not been that peculiar flavour imparted to any of our out-door fruits as there would have been had the weather been otherwise:—had it been similar to the heat of 1857 there would have been a different tale to have been told. Let us hope that the summer of 1861, which will so soon be here, may be more genial than the past one has been. If it is, it will gladden the hearts of many who are in any way connected with horticultural pursuits. We may then look forward for a far less number of cracked Melons, which have been too plentiful this year, and less water-washed fruit. The best-flavoured Peaches here were Early Newington, Royal George, and Vanguard. Of

Nectarines, New White, Violette Hâtive, and Elruge; and of Plums, Green and Purple Gage: but the best of all was the new White Nectarine.—A. J. ASHMAN.

MUSHROOMS IN SHALLOW BEDS.

DURING last winter, or rather the close of winter, I tried the effect of shallow beds for Mushrooms with great success. Thus three inches of soil were removed from under the back wall of a vinery, this opening was filled up with two inches of fresh horse-droppings, spawned, and allowed to stand three days, then earthed up, and to my delight a splendid crop of Mushrooms came up, just when the thermometer indicated 60° in the vinery about the middle of March. The spawn ran into the soil beneath, but a very little.—A. Z.

[We have frequently had shallow beds in summer when we wished a quick return on the same principle. In fact, we have sometimes inserted spawn into rich soil and with similar results. The heat of the vinery was your great auxiliary. If 10° more heat were given the Mushrooms would have come thin and skinny, and, perhaps, become maggoty. We once lived in a place where there was a good Mushroom-house, but we have seen more Mushrooms from a house half the size in a week, as from that in a twelvemonth. The trees of Peach-houses and vineries were generally supplied with horse and cowdung inside every year, and from these borders inside prizes were frequently obtained for fine Mushrooms, though they could get few or none in the Mushroom-house. We like all the varied information we can get. There are many varied modes for doing the same thing.]

ACACIA PUBESCENS FOR THE BACK WALL OF A GREENHOUSE.

SEVERITY OF THE SEASON.

I SEE in your answers to correspondents, page 164, in answer to "A YOUNG BEGINNER," you recommend for covering a back wall of a greenhouse, Camellias and *Acacia armata*. Permit me with all deference to your superior judgment to recommend to his notice the following plant, which for beauty of foliage, freeness of blooming, rapidity of growth, the ease with which it may be trained to cover a wall, and if required to be trained down the rafters or ends of the house, I think is not surpassed; and above all, I have found it of the whole family that I am acquainted with, the most free from that pest the scale. I allude to *Acacia pubescens* (the true kind), for I have known respectable nurseries have another plant for it, and met with many gardeners, good practical men, and good general plant men, who do not even know it at all. I remember some seventeen or eighteen years since a fine plant at Clapham trained to a back wall, and to the ends of the house (an intermediate one), which was truly grand when in flower, and I also remember how glad we young blue-aprons (aye, and old ones too) used to be, if we were short of bloom and had a bouquet to make, and flowers scarce and snow on the ground, if we could get our kind friend, the head gardener, to help us with a spray or two. Why, we had our bouquet as we thought almost made. I think if our practicals of the present day would only look round and about them, they would find plenty of good, sterling, well-to-do, easy-going, good-natured plants, which would well repay them for their trouble by a good show of bloom when flowers are in general scarce. Some day I may, with your permission, give a list in THE COTTAGE GARDENER of such as have come under my notice, with the view of drawing from others their opinions and practical knowledge of such things.

But to return to my *Acacias*. The following I have seen trained up pillars and walls, but I do not like any so well as *A. pubescens*—viz., *A. armata*. This in a few years gets too stiff and formal, and unless well cut back each year to form young blooming wood would soon fill a house, to say nothing of scale. *A. lophantha*: This is a strong grower, yet if well trained while the shoots are growing may be made to answer the purpose, and last for a year or two, but unless the roots are confined it soon runs over the place. *A. pulchella*: This is a nice kind for a wall in good hands. *A. oleaefolia elegans* if trained up a pillar or rafter, and the pendulous branches allowed to hang down, looks exceedingly pretty. The same may be said of *angustifolia*, *verticillata*, *juniperina*, *grandis*, *lineata*, and *rotundifolia*. I have

seen *longifolia*, *heterophylla*, *platyptera*, and a few others tried, but I think they want a much larger house than most of the readers of THE COTTAGE GARDENER have to give them.

I will, in conclusion, just say we are in the midst of a severe winter: it commenced on the 18th ult., snow on the 19th, with large flocks of wild fowl passing over from the north-east to south-west. Snow is six inches to eight inches deep, not drifted by the wind. The thermometer at 12 o'clock on the 25th in the shade registered 22° of frost, and snipes might be seen by scores at a small drain or watercourse in one of the fields within fifty yards of the turnpike road. At 6 o'clock that evening the thermometer stood at 8°, at 9 o'clock, the thermometer began rising—viz., 12°, wind north-east by north—*Pilsby Nursery, near Clay Cross*.

ROOT-PRUNE! ROOT-PRUNE! ROOT-PRUNE!

THE late Sir Robert Peel's principal watchword, or war-cry, in the fierce days of political party fights was, "Register! Register! Register!" I am given to understand by an enthusiastic Peelite friend of mine that this was and is the ne plus ultra of political wisdom. Being remarkably verdant in these matters, I accept it with simple unquestioning faith; and I thought that it would suit me admirably to introduce my subject of root-pruning. I say, then, to all growers of pyramid Pears, Plums, &c., "Root-prune! Root-prune! Root-prune!" and now is the time to do it.

As the theory of root-pruning has been so cleverly argued and convincingly proved in THE COTTAGE GARDENER to the perfect satisfaction of all, I need not stop to say anything; but as there may be amongst new subscribers some neophyte seeking for a little practical information, I thought I would detail our mode of proceeding. I may as well say that, not being a relative of the Pope of Rome, I do not claim infallibility for anything I either do or say.

Our pyramids are some of them seven to eight feet high, and very tidy cone-like specimens they are, though I say it. Well, to begin at the beginning. We go up to a tree and look at it; and if the branches are in any way spreading—one of Mr. Rivers' "diffuse" customers, for instance, we get some string and tie the branches inwards, so as to give us fair play. Then with the eye we guess a distance at which to put in the spade to dig out the trench; but as guess work is noted for its uncertainty, I have taken actual measurements, and here they are:—from the bole of the tree to the outer edge of the trench 2 feet 6 inches, or from that to 3 feet; not more. With our left hand to the tree we keep digging round and round till we have got below the principal roots. Then with a sharp knife we cut off all the roots close to the soil on the left hand side of the trench; but as Pear stocks are rather jesuitical in their ramifications, insinuating themselves into every conceivable corner, we have to adopt extra measures. We then take the four-grained fork and begin (for want of a better word), to "piggle" underneath, all round by the edge of the concrete upon which the trees are planted, to see if we can find the cause of gross watery shoots in the shape of a fat root or two, which are off into the darkness in search of something. If we do find them we use the knife to persuade them to stop. We cut them off, and then fill in the trench, treading the soil firmly in as we proceed. By the way, ours is light gravelly land. "Very simple this," I hear some one say. Yes, yes, my friend, but very effective as the result will show.

Whilst on the subject of Pears, we have in our garden at this time an espalier Louise Bonne of Jersey, which has this year borne a crop of fruit, and on the 12th of November was in flower. If I was to send this information to any of the county papers it might shine as a *lusus naturæ*, or as a parallel paragraph to the monster Turnips and gigantic Cabbages which are chronicled about this time; but as it is explainable in a few words, the result of a very simple cause, I do not think it is worth setting the Thames or Trent on fire about it.

This tree was one amongst a lot that were lifted in October, 1858. It so happened, on account of some alterations, that they had to be shifted in November, 1859. This spring all the fullest plumpest fruit-buds burst, set their fruit, and matured them. The late summer being so moist the trees have kept growing; and thus the weak immature fruit-buds have gathered strength to develop themselves, and at this time open their flowers.—N. H. POWNALL, *Holme Pierrepont, Nottingham*.

FUCHSIA VENUSTA.

IN answer to "AN INQUIRER," this is a species, and not a garden variety. It was first discovered by Mr. Hartweg growing in New Grenada, near Santa Fe de Bogota, at an elevation of 8000 feet, about the year 1840, but the seeds he sent home were destroyed during the voyage. Mr. Linden was more successful and introduced it in 1847 by the agency of his collectors, M.M. Schlim and Funck.

It is a handsome greenhouse shrub; branches slender and rather hairy; leaves in whorls of three, acutely elliptic, entire, glabrous; flowers pendant, from axils of leaves, solitary, three inches long, and their stalks full two inches more, tube tapering to the base; sepals five, ovate-lanceolate, salmon red, tipped with green; petals oblong, lanceolate, undulated, recurved, orange red.

A coloured drawing of it is in "Flore des Serres," v. 538.

BREAD AND BREAD-MAKING.

THE subject of our present article on household science is one of the most important that can come under our notice, and will, therefore, require a careful consideration at our hands. Before entering on the subject of bread-making, it is essential to investigate the chemical characters of the various substances that compose wheaten flour; as far as our purpose is concerned, this is readily done, for a rough analysis of flour may be made by the aid of a basin of water and a piece of muslin. If a small quantity of flour is tied up in a muslin rag and then well washed and kneaded in water, a milky liquid is obtained, and a remarkably tough elastic substance remains in the rag; this latter is termed gluten, from its peculiarly glutinous character when moist, though, when dried, it becomes of the consistence of horn. Gluten is the flesh-forming or nutritive ingredient in the flour, partaking much more of the nature of animal than of vegetable food. The milky liquid, on being allowed to stand, deposits a fine white insoluble powder, which is starch, and there remains dissolved a certain amount of gum, sugar, albumen, and other soluble ingredients. When wheaten flour is mixed with water and yeast, so as to form dough, and then allowed to stand at rest for some time, it undergoes the process of fermentation, the sugar which it contains in small quantity is converted, as in the ordinary cases of fermenting liquids, into spirit and carbonic acid gas; the latter owing to the tough glutinous character of the dough, cannot escape: hence the dough rises or swells, assuming a spongy character, which greatly contributes to the excellency of the bread. The plan usually followed in preparing ordinary home-made bread is to place the required quantity of flour in a pan, and to pour into the centre the requisite amount of yeast along with a proportion of warm water; sufficient flour then is stirred into the mixture to make a thin batter, which is dusted over with dry flour, and the whole is allowed to stand in a warm place until the batter swells and cracks the flour

strewn above it, the whole is then kneaded up with a sufficient amount of warm water, and thus formed into a tough dough, which is allowed to rise, and when sufficiently light is made into loaves and baked.

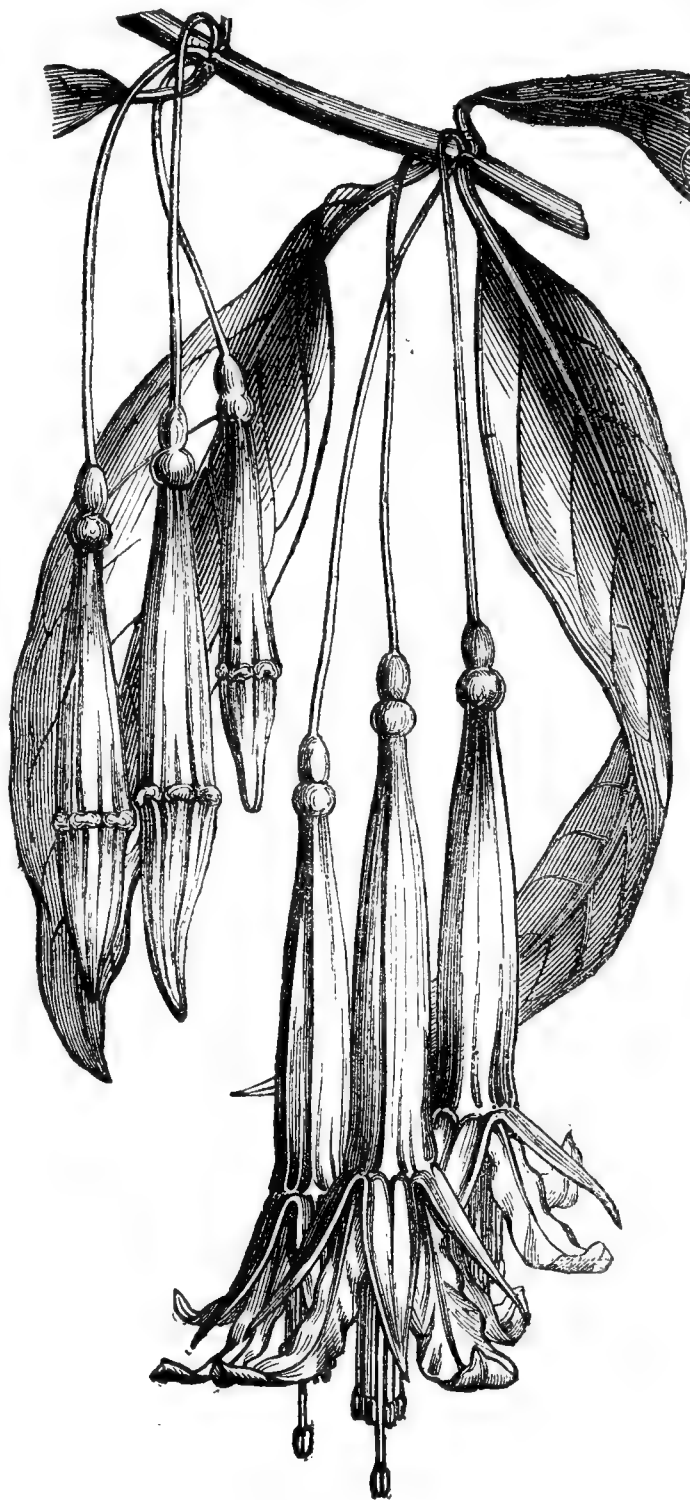
Bakers, however, adopt a very different course; they follow the plan known as that of "setting the sponge;" this is accomplished by mixing a proportion of the flour and water with the yeast, and allowing it to ferment some time before making the mass of dough. The great advantage of this process is, that as the whole sponge acts as a ferment so much yeast is not required, and the bread is much lighter than that made in the ordinary plan.

The following directions have been obtained from one of the most celebrated west-end bakers, and produce, with good flour, a very superior bread:—To make a half-peck loaf, take three-quarters of a pound of well-boiled mealy Potatoes, and mash them through a fine cullender or coarse sieve, add one-eighth of a pint of yeast (about two tablespoonfuls), or three-quarters of an ounce of German dried yeast, and one pint and three-quarters of lukewarm water (88° Fahr.), together with about three-quarters of a pound of flour, to render the mixture the consistence of thin batter; this mixture should be set aside to ferment: if placed in a warm situation it will rise in less than two hours, when it will resemble yeast in appearance, except as to colour. The sponge so made is then to be mixed with one pint of water, nearly blood warm—viz., 92° Fahr., and poured into half a peck of flour, which has previously had one ounce and a quarter of salt mixed with it; the whole should then be kneaded into dough, and allowed to rise in a warm place for two hours, when it should be kneaded into loaves and baked.

The object of adding the mashed Potatoes is to increase the amount of fermentation in the sponge, which it does to a very remarkable degree, and, consequently, renders the bread lighter and better.

In such seasons as the present, when the harvest time is damp, and the Wheat consequently not well matured, the flour is apt to undergo a peculiar change in fermentation, and yield a clammy, sticky, dark-coloured bread, that adheres to the teeth during mastication. Such flour cannot be made into useful bread without some addition to correct its altered character; for this purpose the bakers employ a certain portion of alum, or lime water may be used instead of plain water. These substances prevent the clammy character and brown colour of the bread, and enable flour to be advantageously and usefully employed that would otherwise be quite unfit for human food.

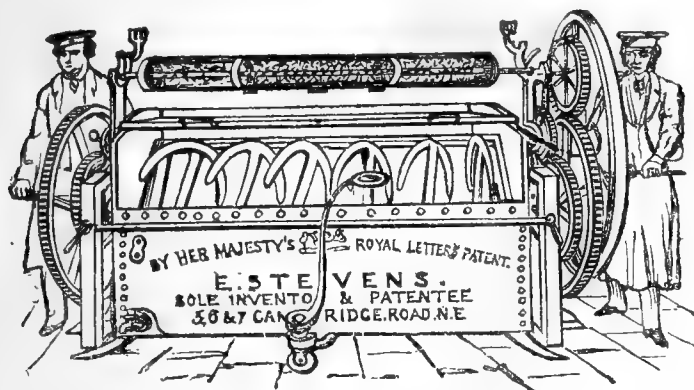
At the present time a reformation appears likely to be effected in the manufacture of bread; hand labour, which is very objectionable, promises to be superseded to a very great extent by a machine invented by Mr. Stevens, of Cambridge Road, London.



FUCHSIA VENUSTA

This machine, which is very effective, sets the sponge, breaks it, and makes up the dough much better than can be done by hand.

In its general character it may be described as a trough, having passing through it a bent axle, carrying a series of knives, placed obliquely on it; this axle may be turned round rapidly by placing the handle of the crank on the wheel which carries the axle, or slowly when the dough becomes stiff, and greater force is required, by placing the crank on a small pinion; this gives a slower motion but with greater gain of power.



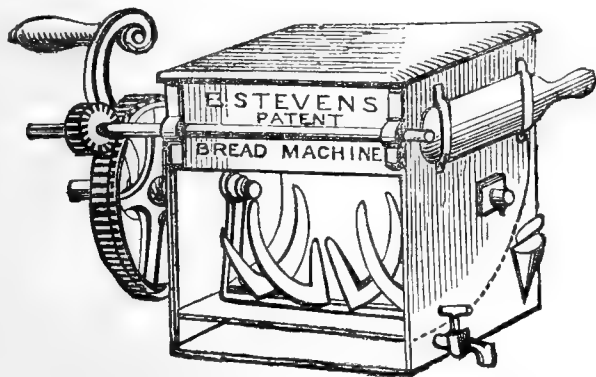
The machines are made of various sizes, from that adapted to a small household, and able to make from one quarter loaf up to eight at one mixing, to that adapted to a large bakery, and capable of making up five sacks of flour at one operation.

We have seen these machines at work at the inventor's bakery, and can bear the strongest testimony to the exceedingly efficient manner in which they set the sponge and make the dough; by the oblique action of the knives passing through the mass, the materials are so thoroughly incorporated, that not a particle of unmixed flour can be detected in the bread, which is of a very light and superior character.

The advantages of the machine over hand labour are several; it abolishes the dirty plans of hand or foot-kneading, and with much less than the ordinary amount of labour produces bread superior to that made in the ordinary manner.

The testimonials that the inventor has received from large institutions where his machines have been at work for some months, prove unequivocally the cleanliness, convenience, and economy of the process. The smaller machines, adapted to single families, are equally efficacious, as they are constructed on precisely the same principles, and have the same mode of action.

The machine which we have had in action is the second size—viz., 12 inches by 10 inches by 14 inches deep, which is adapted to mixing the dough for six to twelve half-quarter loaves at one time. The engraving shows the mixer, which is a bent or



cranked axle, carrying the several curved knives set obliquely upon it; the bottom of that part of the machine in which the flour, &c., is placed, is curved, so that the mixer or cranked axle almost touches it in revolving; below this is a cavity, capable of being filled with warm water, when it is desired to hasten or force the rising of the dough during cold weather. The mixer can be turned round rapidly by placing the handle on the large wheel, or more slowly, but with greater force, when the handle is attached to the pinion or smaller wheel.

The process of bread-making, by aid of these machines, is exceedingly easy. About one-third of the flour to be used is placed in the machine along with about two-thirds of the quantity of water required, with which has been previously mixed the requisite amount of yeast; the mixer is then turned

rapidly, so as to join the whole into a smooth batter, which is termed by bakers the sponge. In the course of about an hour or so, the time varying slightly with the temperature, the sponge rises to double its former size, when the remainder of the water, in which the due amount of salt has been previously dissolved, should be added, and the sponge broken, as it is termed, by turning the mixer rapidly, the handle being placed on the larger wheel. The remainder of the flour should now be added, and the handle turned until it becomes difficult to move, when it should be shifted to the smaller one, and turned till such time as the dough becomes stiff—the whole should then be allowed to remain undisturbed until the dough rises well, when a few turns of the handle clear the dough from the sides of the mixer, and it is ready to knead into loaves for the oven, this being the only part of the operation in which the dough is touched by the hands.

When the simplicity, ease, and cleanliness of this process are compared with the hard labour and difficulty of the ordinary plan of hand-kneading, the contrast is very striking; but the question may be asked, Is it equally efficient in producing light, spongy, superior bread? We can state that we have, in the first instance, watched the entire process, from the setting of the sponge to the withdrawing of the loaves from the oven, as performed at the inventor's bakery; and we have also put the machine to the test of actual practice in our own establishment, employing it to make different varieties of bread, such as white and brown, and with and without Potatoes, and we can truly state that it mixes the dough far better, and with infinitely less labour, than can be done by hand-kneading, and that the resulting bread is of a very superior character.

We have been at some trouble to investigate carefully the merits of this machine, because knowing, as we do, that many of our readers are induced to invest in or sell goods on our recommendation, we were anxious that they should not have to reproach us with having induced them to supply an article that would be unsatisfactory to their customers; but having been accustomed to the use of home-made bread for many years, and having devoted much time to the investigation of the scientific and practical details of the manufacture of articles of food, as well as to other branches of domestic economy, we feel authorised to speak with some considerable degree of confidence on the subject, and, consequently, unhesitatingly recommend the machine as capable of effecting all the advantages claimed for it by the inventor.—(*The Ironmonger and Metal Trades' Advertiser.*)

ROYAL HORTICULTURAL SOCIETY.

WE are pleased to be able to announce that a permanent Assistant Secretary has been appointed to succeed Mr. Booth, who resigned from failing health, and the large increase of the duties necessarily arising from the new arrangements. The gentleman who succeeds him is Mr. Andrew Murray, of Edinburgh, well known as an ardent horticulturist, and as Secretary to the Scotch Association which sent out the botanical collectors to California. That Mr. Murray is the right man in the right place we have not a doubt, and the Council have made a selection which we feel assured will meet with general satisfaction. We take this opportunity of testifying our admiration for the manner in which Mr. Booth has for several years filled the office to which Mr. Murray succeeds, and of assuring him that his courteous manner and gentlemanly conduct will long be remembered by those who have been brought in contact with him.

STOVE ORCHIDS.

(Continued from page 196.)

FEBRUARY.—As the days lengthen vegetation in the Orchid-house will begin: hence a little more water may be given as directed above. In this month the baskets containing Stanhopeas, Gongoras, and similar plants with drooping flowers should have a good soaking by dipping in the cistern. Let them sink gradually in the water, and keep a good look out for woodlice and other insects that will come to the surface out of the compost. Let them be caught and destroyed. Increase the heat 5° and give air on sunny days.

MARCH.—Many species may be potted in this month, provided a decided growing of the young shoots is observed. Plants on blocks should be looked over and retied, and fresh moss added.

Some will require large blocks, let such be attended to at once. Dendrobiums will also be showing signs of vegetation, attend to them and give them fresh food in the shape of new compost. If the spring is early, a great part of the work instructed to be done in April may be done in this month.

INSECTS.

Every attention to grow Orchids well may be bestowed upon them in a proper manner, but if insects are allowed to increase to an injurious extent all the labour will be thrown away: hence Mr. Bateman, of Knypersly, says in his large work most emphatically, *Beware of noxious insects*. Frequently, when collections of Orchids arrive from abroad they are covered with white scale; and if they are sent in boxes, that destructive insect the cockroach will be found in great force. Such being the fact, the importer will, or at least should, try to destroy every one before he places such plants in the house. In addition to these two, the following insects are too frequently found in Orchid-houses—namely, woodlice, thrips, large black and small white slugs, red spider, and sometimes, though rarely, the green fly. As such insects when they abound (which they will soon do if neglected), are so injurious to these my favourite plants, I shall lay before my readers the methods I have employed to destroy them.

WHITE SCALE.—This is the most pernicious of all the tribes of insects to Orchids. It first appears like a white speck on the leaves. It grows larger, lays eggs, which when hatched, by some means which I never could discover, the young creep away and fix themselves in clusters, and there increase again, and so on till the whole plant is covered with them. Feeding upon the leaf, they eventually destroy it, and finally the whole plant. I saw a plant that was much infested with this pest: the gardener washed them over with a weak solution of Gishurst Compound, and it completely killed them. I, however, have destroyed them years before Gishurst was heard of by a mixture of sulphur, Scotch snuff, and pepper in equal parts, dusted over them when steam was in the house. This mixture appeared to stick to them, and its pungent qualities killed them without injuring the leaf. No doubt with great care Gishurst would answer.

COCKROACHES are the next worst enemy, and are more difficult to come at. They secrete themselves in cracks of the walls, and also amongst the drainage of the pots, or any out-of-the-way corner during the day. I have captured great numbers by inverting a bell-glass and half filling it with sweetened liquor, taking care that a pathway for them was made to enable them to get to the brink of the vessel. Into it they fall, attracted by the sweet fluid; and there they are prisoners, being unable to travel up the smooth glass: this is an excellent trap for them. They are also trapped by laying slices of Turnips or Potatoes on the surface of the pots, and then taking a light at night, and with a piece of wood, like the handle of a small painter's brush, stuck full of pointed wires, spearing them whilst feeding; but the spearman must strike very quickly and suddenly, or they will be too nimble for him. Poison may be laid for them also. I have used lard and boiled Carrots crushed into a paste, both mixed with arsenic, and made into small balls and stuck upon short sticks. These baits may be stuck into the pots, baskets, &c., at night, and removed in the morning if any fear is entertained of the poison being eaten by domestic animals. All these methods to get rid of these pests should be diligently resorted to and followed till not one is left alive.

WOODLICE.—In old houses more especially these devourers will abound. They also, like the last-named insects, secrete themselves during the day. I have found them in the drainage and in baskets. The poison recommended for cockroaches will kill these also. I have got rid of great numbers by the following plan:—When the compost in the baskets is dry I take them down, and gradually force the basket down into the cistern. The insects do not like wet: hence, as the basket descends, they creep upwards and finally appear on the surface. They are then easily caught and killed. I have found that two or three toads will devour great numbers of woodlice. It is a curious sight to witness the toad catch his dainty morsel; but the spectator must be very sharp, for the toad darts out his tongue and draws in the insect as quick as lightning.

THRIPS.—These tiny enemies feed on the under side of the leaves. They only abound in cases of great neglect. The sponge is the best remedy for them. By washing the leaves with it, using tepid water; the plant may be cleansed; but the operation should be performed in a warm shed, or some of the

insects will escape. I have killed them also by filling the house with tobacco smoke.

LARGE BLACK SLUGS.—If one or two of these voracious enemies find their way amongst the Orchids, they do a serious mischief by feeding upon the young roots, leaves, or flower-stems when just starting. They may be easily traced to their concealment by the slime they leave behind them.

SMALL WHITE SLUGS frequently abound, especially after repotting. Most probably they are brought in amongst the new compost. As they are so small they are not as easily found as the larger species. The only way I could ever find out to catch them was by laying slices of Potatoes, Cabbage and Lettuce leaves, in the places they resort to, turning these traps over every morning or in the night, and destroying them directly.

RED SPIDER.—Though this formidable tiny enemy seldom abounds amongst Orchids on account of the moisture, yet, when the plants are at rest and little water used, they do appear; and by feeding upon the foliage of such plants as are of a thin and delicate texture, they turn them yellow and cause them to be sickly. Like the thrips, the best and most effectual remedy is washing the affected leaves with a sponge dipped in warm water, Sulphur laid on the warm pipes like paint is a good preventive. Should a plant be much pestered with them, it is a good plan some warm day to lay it on one side on grass, and give the under side of the leaves a severe syringing. Do this in the morning, and then the leaves will become dry before night.

THE GREEN FLY is, as every gardener knows, effectually killed with tobacco smoke; but it must be carefully used, never allowing it to break out into a flame.

In conclusion, I would press upon the cultivator never to tire in keeping these tiny enemies in complete subjection. Use all the above means, if necessary, for their destruction. Whenever a root is observed to be bitten off at the end, or a leaf spotted, look diligently out for the spoiler and destroy it. It is much easier to keep a collection of plants clear from insects by destroying them before they begin to breed than if they are neglected.

DISEASES.

Happily Orchidaceous plants are not subject to many diseases.

THE SPOT is the most common and the worst, and is most prevalent on the Indian species, such as *Aerides*, *Saccolabiums*, and the like. It is brought on by excessively forcing the plants to grow, thus extending and stretching the cellular tissues, till in one or more parts they rupture; and the part so torn rots, and thus causes a black spot, which spreads and eventually destroys the leaf, and too often all the young leaves at the top of a shoot. The only remedy is to cut off all the affected leaves, and place the plant in a lower and drier temperature, till fresh healthy shoots and leaves are produced. It is a bad practice to force young plants to grow too rapidly, for the sake of quickly making a large plant. Keeping them in a high, moist temperature all the year will almost be certain to bring on this disease.

MILDEW also will occur, but it is brought on by a cold damp atmosphere. The genus *Anectochilus* is very subject to this, owing to being kept under a bell-glass in winter. The stagnant moist air brings on black mildew, the beautiful leaves perish, and the cultivator asks, Why? The reason is plain enough—the cold damp air has caused the mischief. The remedy is, Keep the plants drier, give more air, and, when the warm long days arrive, fresh shoots will spring up as healthy as could be wished for.

T. APPLEBY.

(To be continued.)

SPERGULA PILIFERA.

SOME time in the autumn of last year (1859) I inquired, through THE COTTAGE GARDENER, how the *Spergula pilifera* had endured the heat of the summer, and what were its merits as a substitute for grass. This inquiry was replied to in a very courteous way by Mr. Summers, saying that it had fully confirmed all that had been said about it at Forest Hill, and inviting me to see it—an invitation I have unfortunately been unable to accede to, but feel assured it does answer well at that place; for Mr. Bennett, at page 156 in Vol. XXIII., confirms what Mr. Summers had said in its favour of withstanding the drought, though he had considerable doubts of its acting as a substitute for grass in many other respects. But as another season has passed away, differing widely from that of 1859, I again ask,

through *THE COTTAGE GARDENER*, What are the merits of this plant as a substitute for turf? I more particularly ask the question of those who have grown it. Opinion may be useful at times, but a practical result is much more so; and if those who have grown this novelty would record faithfully their success or failure with it, we might then arrive at a just conclusion upon its merits. It has been represented as equal to gas, steam, electricity, or cod-liver oil in its usefulness; how far it may rival the first-named three of these great national boons I leave for its advocates to acquaint us with, but think it may possibly take rank with the last. Although, unfortunately, or perhaps fortunately, I have had no experience with that universal medicine, but I have had a little to do with *Spergula*, and therefore take this opportunity of reporting upon it, and shall be glad to hear how far my observations are confirmed or opposed by those of others who have had it; for as the evidence we have had of it hitherto has been, on the whole, meagre and conflicting, the real merits of the article in question will more certainly be arrived at amongst the many.

In the spring of 1859 I procured a few plants of *Spergula pilifera* from a source said to be genuine. These I divided, and grew on during the summer in a bed of kitchen-garden soil; and in the early part of October these I divided again into small tufts, which I planted in a compartment of a cold pit where *Calceolaria* cuttings were being put in to stand the winter. These small plants I think took hold of the ground, but so quickly withered and apparently died away, that I felt at a loss to comprehend how it could be regarded as a boon to the gardening world, especially as the *Calceolaria*, amongst which it was planted, received no harm from the frost; this occasioned my inquiry about it and its results, and I may say that only one or two of the little plants so put in survived the winter, while the tender *Calceolaria amplexicaulis* stood pretty well in the same place. However, I obtained some more plants the last spring, and in the middle or latter end of May I divided these, and planted a circular bed, about seven feet in diameter, with them, the situation being a declivity facing the south, and the soil portions of a previous flower-bed, the place being converted into a geometric garden. The circle alluded to was planted with this *Spergula* instead of turfing it, a kerb edging surrounding it. No place could be much better adapted for its prospering, and it did grow and look well for a considerable time, until it began to flower, when I could not see in which way it exceeded the common Daisy in appearance. Subsequently, however, these disappeared, and about the end of September, the plants being then about united, the whole, with very little exception, had that green velvety appearance so much lauded by its advocates, and I was in hopes this green velvety appearance would have been permanent; unfortunately, this has not been the case, for early in October some plants showed symptoms of dying off; and these being succeeded by others, there are scarce any perfectly green patches left. Now, if this be a general feature, adieu to its utility as a turf substitute; and I cannot account for its dying or disfigurement from any fault in the weather or its situation; the soil was deep and rich, and up to the time I write we have scarcely had any frost, so little, in fact, that two beds of Mangles' Variegated Geranium, in a perfectly exposed place in front of my window, look as well now (17 December) as they have done all the season: some frosts about the middle of October did injure them, but they recovered, and have grown a good deal since then; and assuredly the *Spergula* ought to be as hardy as this Geranium. But I am willing to believe that some part of the treatment we have given it may have been wrong. At the same time I may venture a doubt if any plant that will not accommodate itself to such a position as the one alluded to can ever become a good substitute for grassy turf; and though in my case a kerb edging kept it in bounds, I ask, What sort of an edge does it make when cut in a similar way to turf? Furthermore, I ask, How does it endure hardships of the broom, where that implement has to be roughly plied over its surface to remove leaves and other litter? In my case I know the scrubbing that it is common for grass to receive would reverse the stems of this *Spergula* so as to give it a ragged appearance; and if that operation were performed just now, very little of it would be left, so much is it withered and decayed. If it has answered better in another place, I hope the manager of it will detail his practice; but I have seen one or two other cases in which it failed exactly as it has done here; so that its adaptability to all situations is more than questionable, and hereafter we must regard it as a novelty, or for certain positions it may be more particularly

suited for; but if the mere covering of a particular spot with a dense herbage of beautiful green be the criterion of merit, the *Spergula pilifera* is second to more plants than one, as *Saxifraga hypnoides* or *S. tridactylites* is its superior in many respects. But of the merits of the last-named plant I may, perhaps, have something to say hereafter, not, however, as a substitute for turf, but for covering rough places. In the meantime, let the merits and shortcomings of this *Spergula* be fairly reported by those who have grown it; and if it be decided by the majority of these parties that it is equal to all that has been said in its favour, I, for one, will acquiesce in their decision.—J. ROBSON.

NOTES ON SOME NEW PLANTS.

ALOCASIA METALLICA.—This is, without a doubt, the finest plant of the season. It has ovate-peltate leaves a foot and a half long, by one in width, of a bright shining bronze colour. The foliage is produced from an underground tuber or rhizome; the flowers, as in most of the allied plants, being far less attractive than the leaves. No words can describe the beautiful play of colours on the leaves of this noble plant. It belongs to Aroidaceæ, is a native of Borneo, and was introduced by Mr. Low, of Clapton.

BELOPERONE VIOLACEA.—An acanthaceous plant, introduced from Brazil, by M. Linden, of Brussels. It produces during winter terminal heads of gaping, purplish flowers, with white markings on the lip; these remain a long time in bloom. It is, like some of its near relations, *Justicia* and *Thysacanthus*, of rather a bad habit, being inclined to run up with tall, straight stems, and lose its lower leaves.

IXORA JUCUNDA produces large heads of creamy white flowers, but the plant has an upright and rigid habit, which is a great drawback to its usefulness. It is a native of Ceylon, whence it was sent by Mr. Thwaites, the director of the Botanic Garden of Peradenia.

STEPHANOPHYSUM BAIKIEI.—A very free-flowering acanthaceous plant, introduced to the Royal Botanic Garden, Kew, from the mouth of the River Niger. It produces large panicles of tubular crimson flowers at the points of the shoots, and smaller clusters in the axils of the upper leaves. As these brightly coloured flowers are produced in November and December, the plant is one of the most useful of those sent out this year. It strikes very freely from cuttings, and is very easily grown into a good specimen.

COLUMNEA ERYTHROPHŒA.—An upright bushy plant, with soft, downy, ovate-lanceolate leaves. The flowers are solitary, only one appearing in the axil of each leaf, but they remain a long time in perfection, and as there is a nearly constant succession of them the plant is seldom out of bloom. The flowers are tubular, an inch and a half long, dividing at the mouth into five unequal lobes; the colour is a brilliant vermilion. But the most remarkable feature is the calyx. This is five-lobed, and spreads out quite flat; it is an inch or more in diameter; it is at first quite green, but as it gradually expands the centre becomes of a rosy colour, and only the points of the lobes retain their green tint. It is a native of Mexico, and for this remarkable plant we are also indebted to that enterprising nurseryman, M. Linden.

DRACENA (CORDYLINA) INDIVISA.—This beautiful plant was introduced from New Zealand, by Messrs. Lee, of Hammersmith. The leaves are broad sword-shaped, the midrib is of a bright amber colour, and smaller veins of the same colour run parallel with it at slight intervals; the other parts of the leaf are bright green. This will be a valuable addition to our collection of foliage plants, particularly as it may be successfully cultivated in a warm greenhouse.—KARL.

NEW PRODUCT FROM BLACK CURRANTS.

THE manufacture of sugar and brandy from Beetroot is well known to be an important branch of agricultural industry in France; but recently another manufacture has sprung up which has scarcely yet attracted any notice in this country—we allude to the production of a *liqueur* from Black Currants, now in extensive demand in France, and likely to be still more in request if the calculations of those engaged in the trade are to be at all relied on. Some of our readers may have tasted the *liqueur de Cassis* even in this country, as we believe it has been.

imported to a limited extent. For the production of this liquor the planting of Black Currant bushes has been extending annually during the last nineteen years, these bushes now occupying a considerable portion of land formerly raising Vines in the south of France. The demand for the plants has been so great that almost fabulous prices have been given for them—£3 up to £4 10s. per thousand. The price has now fallen to from 16s. to 24s. The number planted near Dijon alone is estimated at between one and two millions. It is highly probable that the alterations in the wine duties will interfere with the extended cultivation of Black Currants in France, and perhaps also check the cultivation of Currants and other fruits in this country for the production of wines, and liquors for adulterating wines, the produce of the Grape. There may be a portion of the juice of Black Currants used to increase the quantity of low-class clarets or *vin d'ordinaire*, as well as of Burgundy, or to give more body to such wines to meet the vitiated tastes of wine-drinkers in this country. But this will depend partly upon the demand and supply of Grape wines, with the consequent alterations in the prices. Should such admixtures take place quality will not be maintained, and some of the most delicious Burgundies and Bordeaux wines may be so changed in character as no longer to occupy the first place. It may, however, be inferred that the higher classes of French wines will also be obtained pure, if a corresponding price be given.

We learn from a highly interesting and valuable work, published in Paris, "Le Jardin Fruitier du Museum," edited by Professor Decaisne, that the cultivation of Black Currants for the manufacture of *liqueur* is at present confined chiefly to three departments, of which the *Cote d'Or* may be taken as the centre. The cultivation extends from Chagny to Dijon, a distance of eighteen to twenty miles in length, and from one to three miles in breadth. The zone of Currant bushes partly occupies lands on which the Vine is still cultivated, between the rows of which they are planted, and partly lands not suitable for the Vine. If the quality of the *liqueur* is to be taken as the future guide in devoting lands to the growth of Currants, the better descriptions of lands for the production of *vins ordinaires* will be selected. There is a great difference in the quality of the *liqueur*, but as a rule, where the wine is good the *liqueur de Cassis* is also good. The best sells at 2s. 9d. per quart wholesale. The most common practice now is to plant the Currant bushes in trenches four feet three inches apart, and fifteen inches deep, the plants being placed at a like distance from each other in the rows. This has been found to be the best distance between the bushes. The most suitable soils are the chalky with a portion of clay. The yield of Currants varies with the age of the plantation, the soil, the cultivation, and the character of the season. The produce appears to be more uniform than that of the Vine; and each bush is calculated to yield from 2 lbs. to 5 lbs. of Currants. The price paid by the manufacturers has varied considerably. The proximate average price during 1841, when the fabrication of the liquor first commenced, was 8s. per 100 kilos., or about 3s. 3d. per cwt.; next two years, 4s.; next two years, above 8s.; next ten years the average was 12s. 2d.; in 1856 and 1857 it was 16s. 3d.; while in the year 1858 it rose to 30s. 6d. Last year the prices fell to 20s. 3d. to 28s. 6d. The manufacture is in the hands of a few persons. It appears from the statement communicated by Dr. Maillard that in the department of *Cote d'Or* the trade is rapidly increasing. In the town of Dijon there are three manufactories producing 88,000 gallons, six producing 66,000 gallons, and upwards of twenty other manufactories producing considerable quantities. Besides these, there are other establishments at Beaune and Chalon-sur-Saone, and other villages in the environs.

It is expected that the manufacturers will receive higher profits, as several have contracted with cultivators to furnish Currants at much lower prices than have been ruling for several years. These contracts are for periods of ten or twelve years, at prices about 12s. per cwt., the grower to give the whole produce to the person with whom the contract has been entered upon. The demand for the liquors has hitherto overtaken the supply. The profits of the grower are very considerable, the average sums obtained per acre being from £22 to £40. After the plantation is formed, the outlay is comparatively small, the pruning of the bushes and the keeping down of weeds being the chief items of expense.

The question arises whether, if Black Currants can be grown in France for the production of a *liqueur* which leaves handsome returns, they cannot be raised in a similar manner in this country.

None of our garden fruits are more easily grown, and our Black Currants are larger and of equal quantity and quality with those produced in France. The variety cultivated for the liquor is the Gros Cassis de Naples; but it appears to be the same variety as is cultivated in our gardens. Indeed, the climate of the western islands, or the Shetland Islands, is admirably suited for the production of Black Currants, the crops being large and the berries plump and finer coloured. If the manufacturing of the *liqueur* was commenced, it is not at all impossible that the production would rapidly extend. A supply of Currants could be produced to meet any demand, and at lower prices than those which rule in the south of France.

At present, Black Currants are grown in this country for making preserves, Black Currant jam, and Black Currant jelly. Hitherto, the Black Currant bushes have been planted without much regard to exposure to the sun—indeed, in many gardens they are planted on back walls, or in confined situations. It appears, however, from the experience gained in the south of France that the quality of the fruit is very much improved by planting the bushes in trenches, and with considerable distances between the plants. Planting in trenches raises the temperature of the soil and atmosphere surrounding the bushes, and it may thus be inferred that high temperature and exposure to sunlight are conditions favourable to the quality of the fruit. This being held established by experience in France, it should lead to an entire change of practice in this country. The sugar which goes to form the preserves is said to qualify inferiority in the fruit, but this may be questioned. With more attention to the cultivation of the Black Currant, it is not improbable that preserves from it will be more generally appreciated, and that disagreeable acid taste which characterises most preserves made from Black Currants be got rid of.—(*Scotsman*.)

[We may add that Currants are extensively grown in France for the manufacture of jellies, which frequently form part of the dessert at dinner. The fruit is also sometimes used along with wheaten bread, forming the mid-day repast of the working classes. The varieties grown consist of, beside the Black Currant, the White, termed Grosseillier de Hollande; G. a Fruits Carnes—an intermediate variety between the Red and the White; and the Red, G. Versailles—a variety said to be superior to the White, and one of the oldest varieties in France.]—(*Scottish Gardener*.)

TABLE OF MONTHLY TEMPERATURE, AND AMOUNT OF RAIN IN 1859 AND 1860. TAKEN at Culford, near Bury St. Edmunds.

| | Mean Max. Tem. | | Mean Min. Tem. | | Highest Tem. | | Lowest Tem. | | Rain. | |
|-----------------|----------------|------|----------------|------|--------------|------|-------------|------|-------|------|
| | 1859 | 1860 | 1859 | 1860 | 1859 | 1860 | 1859 | 1860 | 1859 | 1860 |
| January | 43 | 42·5 | 34 | 32·5 | 53 | 54 | 24 | 25 | 0·68 | 2·38 |
| February | 48 | 40·5 | 36 | 29·5 | 56 | 49 | 26 | 20 | 1·04 | 1·23 |
| March | 53 | 47 | 40 | 35 | 63 | 58 | 22 | 26 | 1·30 | 2·93 |
| April | 54 | 52 | 38 | 35·5 | 74 | 64 | 27 | 28 | 2·49 | 0·93 |
| May | 62 | 64 | 44 | 46 | 79 | 73 | 32 | 32 | 3·32 | 3·93 |
| June | 72 | 65·5 | 53 | 49 | 85 | 73 | 42 | 41 | 3·40 | 4·69 |
| July | 79 | 68·5 | 58 | 50·5 | 89 | 76 | 45 | 40 | 3·37 | 1·81 |
| August | 73 | 66·5 | 54 | 51·5 | 86 | 72 | 46 | 46 | 1·72 | 5·40 |
| September | 64 | 58·5 | 49 | 45·5 | 73 | 67 | 41 | 33 | 2·29 | 2·67 |
| October | 56 | 56 | 44 | 45 | 73 | 64 | 25 | 30 | 3·34 | 1·59 |
| November | 47 | 44 | 35 | 35 | 57 | 50 | 25 | 28 | 1·56 | 2·38 |
| December | 39 | 39 | 30 | 30 | 55 | 51 | 5 | 0·3 | 2·66 | 3·26 |

Amount of rain during 1859, 27·07 inches; 1860, 32·20 inches.

Highest temperature of 1859, on July 18th, 89°.
Highest temperature of 1860, on July 15th, 76°.
Lowest temperature of 1859, on December 18th, 5°.
Lowest temperature of 1860, on December 24th, 3° below zero.
—P. GRIEVE.

PUTTERIDGE BURY AND ITS FLOWER GARDENING.

(Continued from page 102.)

THE avenue of beds here described were only a part of the flower garden at Putteridge; for, independent of these, there were several other large beds scattered over the lawn. Some near the mansion, and not far from the Italian garden, were arranged in order and uniform in size. These beds were raised

about two feet with rustic work; and that being covered with Ivy growing on the outside and kept trimmed to a nice barrel shape, the circumference of the leaves at the centre being somewhat more than at the top and bottom, gave it a neat and dressy appearance. The height was about two feet. Most of these beds were planted differently:—some in rings; others had an outside edging, and the centre divided by cross lines into quadrants. Of the latter class one struck me as being particularly handsome. It was thus:—

Central plant, *Cassia corymbosa*.

Outer edging adjoining the Ivy at the top, Yellow Tom Thumb *Tropæolum*.

Inner edge adjoining the *Tropæolum*, *Perilla nankinensis*.

The main body of the bed divided into four quadrants by single lines of *Perilla* meeting the *Cassia* in the centre, and the quadrants themselves planted with *Geranium Alma*. The clear white leaf of this *Geranium* contrasting so strongly with the *Perilla* gave this bed great attraction. There were several other beds planted in this style, but none that seemed to me so effective. The dark, sombre hue of the Ivy supporting a bed two feet high, with the first ring of Yellow Tom Thumb *Nasturtium* followed by the quartering of the main body of the bed with *Perilla*, presented a feature that was distinctly seen as far as the eye could reach it. Other beds were planted on the dotted principle, as well as by a number of rings; but, as before said, the above was most admired.

Leaving the reader to conjecture the effects produced by several of these large beds, we will now conduct him to a more remote part of the grounds, where the taller class of plants find a place—as Hollyhocks, pillar Roses, Dahlias, and other plants. Some of these beds were very large, and all were surrounded by an edging of two or three lines of plants: one struck me as being very pretty. It was thus:—

Main bed Hollyhocks, Roses, &c., planted in the usual way. Adjoining them was one row of a double yellow *Chrysanthemum*—the specific name I have never been able to learn, although I had the plant for years. Second row, China Asters of the French variety. Edging next turf, dwarf French *Mari-golds* of the miniature class, all of a beautiful orange colour.

Another group of Hollyhocks and Roses was edged with a yellow *Dahlia* of an intermediate height between the ordinary ones and the dwarf *Zelinda* class, the purple one of which adjoins it; and an edging of yellow *Tutsan*, or *St. John's Wort*, next the turf. This last plant, much despised as it generally is, Mr. Fish makes subservient to the flower-garden purposes with tolerable effect.

Another group of the same had a margin of *Salvia fulgens*, then Purple *Zelinda Dahlia*, with yellow Tom Thumb *Nasturtium* for an edge.

Another bed of Hollyhocks, &c., with the intermediate *Dahlia*, had an outer edge of *Ranunculus Asters*, which looked very well; but I do not know whether their continuous blooming is as much to be depended on, but their close, compact growth entitled them to notice.

Following these irregular masses, with now and then encountering specimen trees of the *Pinus* tribe, as well as *Rhododendrons*, we are led into a plot of ground devoted to the growth of Ferns and other plants of singular or ornamental foliage. A good deal of taste is here displayed in making what, in an ordinary way, would be regarded a flat tame piece of ground assume the rugged outline of rockwork grown over with plants common to such places. And I may mention here that one of the plants most useful to cover a piece of such work is the *Saxifraga subulata* or *S. hypnoides*—a plant more darkly green than the *Spergula*, and more free of growth. Ferns of various kinds, with *Pampas Grass*, *Heracleum giganteum*, *Palma Christi*, and various other plants found a place here, as well as some useful shrubs and trees, to diversify the scene. There were some other spaces of a similar character in another part of the grounds set apart for the growth of perennial plants not otherwise met with in the flower-beds, and several novelties might be met with amongst them. It was there that some patches of the purple *Spinach* were grown; but I do not think it will compete with the *Perilla* for effect.

In another part of the grounds where a good opening invited an arrangement of flower-beds, a very pretty design was formed, and the planting was done in a way which a young lady, an excellent judge of such matters, told me was the finest thing in the garden. I wish the design could be given; but as that cannot well be done accurately, I must try to describe it thus:—A

circular centre-bed was surrounded at an equal distance by eight other beds, four of these being alike in shape and size, and the others also like, though different from the first. These eight beds of the inner ring were surrounded by eight more beds on the outer ring. These last were simple in form, being, in fact, a ring or zone, cut into eight parts by strips of grass four feet or more wide, and turf of the same width or more separated the other beds from each other. The planting of this group was as follows:—

No. 1. The central bed of all had a pillar *Geranium*, Giant, ten feet high (a noble plant), surrounded by *Heliotrope* and *White Petunia*.

No. 2, 2, 2, 2. Four beds not adjoining each other in the inner ring described above, planted with *Scarlet Geranium*, with an edging of *Cineraria maritima*. A standard or pillar *Fuchsia* was in the centre of each, standing clear above the *Geraniums*.

No. 3, 3, 3, 3. Four beds intervening with 2, 2, 2, 2, all planted with yellow *Calceolaria*, edged with *Verbena Purple King*. The standard plant, I believe, was *Rollison's Unique Geranium*.

The above comprises the central and eight surrounding beds. We now come to the circumferential ones, which were planted in pairs—beds opposite each other being alike, but, in so far as colour was concerned, they were in fours, the same as the inner series. As will be seen, 4, 4, and 5, 5, forming the alternate beds in the ring, were all purple; while 6, 6, and 7, 7, the intervening ones, were rose or rosy crimson. The planting was thus:—

No. 4, 4. Two beds opposite each other, *Purple Nosegay Geranium* edged with *Golden Chain*, and having a tall pyramid *Geranium* in the centre.

No. 5, 5. Similar to the last. *Purple Petunia* edged with *Oenothera prostrata*. *Scarlet Geranium* in the centre as in the other.

No. 6, 6. Two beds *Geranium Rubens*, edged with *Geranium Flower of the Day*. Pillar *Scarlet Geranium* in the centre.

No. 7, 7. Two beds *Geranium Cerise Unique*, edged with *Mangles' Variegated Geranium*, having, like all the beds in this series, a *Scarlet Geranium* in the centre.

The appearance of this group was very fine; the central plants standing clear above everything broke the tameness which a flat surface produces, and the whole was much admired.

Another group of beds arranged to a geometric pattern adorned another part of the grounds and looked well. But enough has been given to convey a general idea of the mode in which these gardens are managed; but I cannot close this account without noticing the fine ribbon-border which bounds the flower garden on the north side, adjoining the kitchen garden, and which is, perhaps, the most telling thing of all. I have before stated that the south wall of the kitchen garden faces the grounds and the ribbon-border here mentioned runs parallel with it. The wall itself is covered with *Tea* and other *Roses*, as well as several half-hardy, *New Holland*, and other plants, and a space of about two or three feet is devoted to the growth and management of them. The remainder of the border is planted as a one-sided ribbon-border as a lean-to, facing the walk which runs parallel with the wall. Another ribbon-border on the span-roofed principle is on the other side, and faces both ways. Besides this there are some ornamental iron-work arches slightly covered with creepers, thrown over this walk and uniting with the wall; and along the centre of the outer ribbon-border (just on the ridge), iron pillars are placed at stated intervals; the tops of these are connected with chains as festoons, and creepers of various kinds are trained to them, one of the most useful being *Tropæolum pentaphyllum*. But several other borders are introduced. These borders are of great length, and being closely planted must take a great number of plants. The planting of the border next the wall was thus:—

First row nearest the wall, *Geranium Cerise Unique*.

Second row, *Ageratum mexicanum*.

Third row, *Calceolaria*, yellow.

Fourth row, *Verbena Purple King*.

Fifth row, *Geranium Brilliant*.

Sixth row, *Lobelia speciosa* and *Cineraria ameloïdes*, the latter intended to be taken out after first blooming.

Seventh row, *Golden Chain Geranium* next the walk.

This looked very well, and the plants were all the proper height, excepting that *Geranium Cerise Unique* was not higher than the *Ageratum*. This, perhaps, was quite as well, as the space next the wall would not have worked in so well.

The border on the other side was the same as the above,

omitting *Geranium Cerise Unique*; it also faced both ways thus:—

- Row next the walk, *Golden Chain Geranium*.
- Second row, *Lobelia* and *Cineraria ameloïdes*.
- Third row, *Geranium Brilliant*.
- Fourth row, *Verbena Purple King*.
- Fifth row, *Calceolaria*, yellow.
- Sixth row, *Ageratum mexicanum*, being the centre or ridge of the ribbon.
- Seventh row, *Calceolaria*, yellow, same as fifth.
- Eighth row, *Verbena Purple King*, same as fourth.
- Ninth row, *Geranium Brilliant*, same as third.
- Tenth row, *Lobelia* and *Cineraria ameloïdes*, same as second.
- Eleventh row, *Golden Chain*, making both edges alike.

The whole of the plants forming these inimitable borders were all that could be desired, so far as the state of the weather at the time I saw them allowed them to be. Lines of colour clear and distinct, not run into each other, but uniform and of the proper height. An ornamental door or gateway leading to elsewhere terminated this fine border, which I could not regard otherwise than the most effective planting in the whole grounds. But Mr. Fish seemed disposed to alter it another season—in fact, I expect the arrangement of the whole undergoes a change every season; even the beds which I have described will, I suppose, be different another season, except so far as the permanent plants are concerned. But as there are some other things at Putteridge Bury deserving attention as well as the flower garden, I find I must defer until another opportunity the task of describing them.

J. ROBSON.

PEACH-TREE TRAINING AND PRUNING.

IN one of your contemporaries, a correspondent professes to give a modicum of advice on the culture of Peaches; but appears more assiduous in pointing out the errors and mismanagement of some of his neighbours, than in the diffusion of knowledge. In the first place, he points out the errors at Charlington Manor; and, in the second, those at the Vicarage, Pewsey Hollow. He says, the clergyman here is a clever man and a good observer, and then states that one side of his Peach tree is three times as big as the other, and those at Charlington Manor exhibit symptoms of decay through the bearing shoots being laid in at full length. To obviate this, he recommends the bearing shoots to be shortened considerably, in order to induce them to push a shoot from their base to succeed them in their turn. This advice I consider quite beside the mark, and calculated to lead the inexperienced gardener astray. He points out the tree with the big side, but leaves the clergyman in the dark as to how he might have a tree with two big sides. And he goes on to say, that hundreds of cases not unlike these examples are to be found all over the kingdom, owing to not knowing exactly what treatment a Peach tree requires. He does not supply the knowledge which he says is wanting, so I request permission to state it briefly.

In the first place then, as to shortening the bearing wood. This requires the greatest care of the gardener to perform properly, for if you leave fruit-branches without wood-buds at the extremities, they die as soon as they have flowered. The fruit-buds of the Peach are easily recognised, they are round and ruddy, and garnished with a cotton envelope; whereas the wood-buds are, on the contrary, long and of a green colour. The wood-branches are known by their vigour, and by their bark which is grey from the first year. The bark of the fruit-branches is very smooth, green on the side towards the wall, and red on the side towards the sun. Again, with reference to the tree with the threefold side. The sap flows more strongly unto a shortened branch than into a long one: therefore, when one part of a tree becomes less strong than the other, prune it shorter so that the sap may ascend in greater abundance and reinforce the weaker part. This shows, too, that to have fruit you should prune long, and short to have wood. The sap of trees always mounts perpendicularly from the root to the top, flowing through the straight branches and producing wood instead of fruit: therefore, when you wish to restore equality between two branches of which one is more weak than the other, bend the more vigorous one down a little, and raise the weak one which will soon overtake it. Also, when you wish a tree to furnish well at the bottom, you must prevent the sap mounting to the head by inclining the upper branches downwards and pruning them long.

The fruit of the Peach is produced on the shoots of the preceding year. If these are shortened indiscriminately, some will grow too luxuriantly and yield nothing but leaves; and others too weakly and be incapable of maturing the fruit. To furnish bearing shoots in sufficient abundance and of proper strength is the great object of Peach-pruning; the fan-form is generally adopted. Young trees are often procured after being trained two or three years in the nursery; but I prefer to commence with a maiden plant—that is, in the first year after it has been budded, I then head it down to six buds. In the following summer two to four shoots are trained in according to the strength of the plant, the laterals must be thinned out and properly nailed to the wall. If there are four branches, in the subsequent winter the two central ones are shortened back to produce others, and the lower ones are laid in at greater length. In the following season additional shoots are sent forth, and the process is repeated till eight or ten principal limbs are obtained.

To maintain the equilibrium of the tree the principal branches must be raised or depressed, the laterals must be carefully thinned out (by pinching off with the fingers) in summer, the remainder must be nailed in to afford subordinate members and bearing wood.

When the centre of the tree is well filled up, the most necessary part of training is to prevent the inferior branches from acquiring an undue ascendancy over the mother branches. Meanwhile the pruning for fruit has been going on. This consists in shortening the laterals which were nailed in at the disbudding or summer pruning. Their length must depend on their individual vigour and that of the tree.

The buds which are generally double, with a fruit-bud between them, seldom occur quite close to the insertion of the shoot, two or three pairs may be left with a wood-bud at the point to afford a growing shoot, in order to act as its lungs; for it is very necessary to have leaves above the fruit. When the fruit begins to swell the point of this leading shoot must be pinched off that it may not drain away the sap. Any young shoot from the wood-eyes of the bearing branch must be carefully preserved, and in the following winter it takes the place of the branch which has borne fruit. If there be no young shoot below, and the bearing branch is short, the shoot at the point of the latter may be pruned for fruit; but this must be done cautiously, and if the bearing branch be long it is better to cut it back for young wood. It is the neglect of this which constitutes the principal error of Peach pruning.—T. H. CARLINE, *Lumsdale*.

MILDEWED VINES.

IT must be obvious to every reader of *THE COTTAGE GARDENER* that Mr. Gadd, at page 135, is keeping good the well-known adage, "many men, many minds," or rather opinions; and certainly must be ascribed to be as untimely in his remarks as a severe frost would be in the month of June, in saying I am decidedly wrong (a hasty conclusion, and seemingly without a second thought) in ascribing the mildew on Grapes to the syringe. Can it be possible that Mr. Gadd read the paragraphs at page 80, as well as the eighth at page 81? If he had, and combined the whole together, he certainly must have come to a far different conclusion to the one he has stated. In fact, where mildew makes its appearance in a house at all, is it not far too often through the whole affair being mismanaged? Yes, and the only hope (where such is the case) of improvement is in trying again. Such has been the case many a time before, depend on it. There is not the shadow of doubt but that far too great a number will find it so again.

Supposing we were now to take a retrograde movement, or step back and glance at it, or the ravages mildew has made during the last two or three years, but more especially to the year 1858—a year in which I was brought in connection with more houses infested with the disease than I did any year before or have since. Could that be ascribed to an absence of sun? Certainly not. What can it be attributed to, then? Why, that is soon answered—Nature seemingly steps in and answers for herself on this point. She says, Let the border be composed of the proper ingredients, and to be fed at the proper season; then if they are infested with mildew, it must be through the mismanagement of those that have or have had the care of them.

It was at this date that I came in contact with mildewed vineries in various parts of the west of England. Some in the neighbourhood of Bath—a good Grape-growing locality, and several

others in the county of Wilts; but the worst mildewed house of Grapes that I have ever met with was at a small village nursery, in 1859, at Sutton, then and now in the occupation of Mr. Bullock. It is situated about four miles north-east of the town of Chippenham. I was invited to go to pass my opinion on them there. They were just beginning, although fine bunches, to be encircled with that November-like-fog-coloured-pest—mildew. A few minutes before I entered the house they had been syringed. "Discontinue that practice," was my order at once. (A rather bold order to make the first time of entering the nursery.) It was discontinued, and the whole of the fruit, and foliage as well, as soon as conveniently dry, were carefully brushed with a soft brush very like an aphid brush. The brush was occasionally sprinkled with flowers of sulphur. This stopped the mildew's ravages, but not until it had left such marks on both foliage and fruit as fire does on a burnt child and its clothes.

It was about the same time that I had to do the best I could with two other houses of mildewed Grapes, one belonging to H. Spencer, Esq., the other to J. Darley, Esq., both in the town of Chippenham. These houses, as well as the former one mentioned, bred their mildew from excessive moisture. From each of these houses the pest was eradicated, although in its most malignant form, and that in the first-named gentleman's house without the use of sulphur at all.

From the day I first entered each of these houses I determined, as soon as the opportunity offered itself, to try the experiment which has now called forth these remarks, and which this year (1860) gave me eight bunches of mildewed Grapes (about 10 lbs.) out of about 250 lbs. This was the cost of the experiment; and so perfectly satisfied was I that mildew proceeded from excess of moisture, that I left some of my best bunches hanging within a hand's span to the last without their being infected with, or having the least signs of, the malady. One was treated in accordance with the dictates of Nature, while the others, as I have before observed, were quite the contrary. Was this attended to more, I can safely vouch that there would be a far less number of houses mildewed than at present.—**A. J. ASHMAN.**

VARIETIES.

HOW TO COOK A BEEFSTEAK.—The following were the rules adopted by the celebrated "Beefsteak Club," started in England in 1734:

"Pound well your meat until the fibres break;
Be sure that next you have, to broil the steak,
Good coal in plenty; not a moment leave,
But turn it over this way and then that.
The lean should be quite rare—not so the fat.
The platter now and then the juice receive,
Put on your butter, place it on your meat,
Salt, pepper, turn it over, serve and eat."

This is all very just (except that we like the lean better done,) but there is only one apparatus that will broil delicately, and that is the "Gauze Gridiron." To such as are fond of broils it is an important article for the cooking department. It is made upon the principle of Sir Humphry Davy's Safety-lamp, which is a common lamp surrounded with fine wire gauze. A lamp thus protected may be introduced into an inflammable mixture of air and gas, and will burn, but the flames cannot pass through the wire gauze and ignite the surrounding mixture, because of the cooling effect of the gauze. The heat of the gridiron is insufficient to inflame the fat; as it drops from the meat it falls from the bars through the gauze and upon the coals where it burns. In the old way, it sets fire to that covering the bars of the gridiron, thus smoking and scorching the meat. The wire gauze prevents the flame from either the fuel or fat burning on the coals setting fire to that on the gridiron. In this way the unpleasant smoke of burning fat is avoided, the meat remains free from bitterness and is not burned, and thus made unpalatable. We would suggest a gauze bread-toaster, in order to prevent the scorching of the bread while toasting, and thus improve the quality of toast, whether dry, cream or buttered.—(*Boston Cultivator.*)

TO CORRESPONDENTS.

BOOKS (R. O. C.).—There are descriptive pocket volumes to be obtained at the Crystal Palace, varying in price from 1s. There is one giving a short general description of it, and there are others giving full descriptions of the several Courts. There is no such book on the Vine, and if there were it would not be reliable. You can have the *Cottage Gardeners' Dictionary* free by post from our office for 9s.

RAISED OUTSIDE VINE-BORDERS (A Youngster).—In such a raised outside border, the Vines ought to have done well if well drained; and if forced early, the roots were excited as well as the stems. For all Grapes, and especially all the finer kinds, we would decidedly approve of planting the Vines in the part used as a Pine-pit. Such Vines will last almost any time by annual top dressings; and for early forcing the pipe heating beneath will be an advantage. If you have three arches in the width of the house, why collect the three pipes under the central one? We should prefer one under each arch. But for the economy of the thing, we would drain and drain the outside border, and plant late Vines there, so that by a longitudinal division behind the greenhouse-stage you might make your house into two vineries. The same could be done by dividing across, and planting inside as you propose. We do not quite understand the means of heating.

VARIOUS (An Inquirer).—You must have curt answers, as your queries are many. Mr. Rivers' "Miniature Fruit Garden" gives directions for Peach culture in a cold house. Mr. Fish, in his papers on "Forcing," will give directions for their culture in a hothouse. We do not undertake to write entire treatises in these columns, but are always ready to answer queries on particular points. The roots of Vines planted inside your vinery would travel to the north or any other direction where warmth and agreeable soil tempted them. Transplanting Cedars, Yews, &c., from a good peat soil into a loose limestone soil, without any preparation, was bad gardening; and it is no better, allowing the Grass to grow rank all about them. No wonder the trees are stunted. Remove the Grass entirely from three feet on each side, and point in some well-decayed leaf mould and cowdung every spring. This will revive the trees, and promote their growth, though not at once.

SEED FROM DEFORMED CUCUMBERS (Cardiffian).—It is not advisable to raise plants from such seed. They would, most probably, produce some perfect fruit; but the axiom applies to plants as well as to animals, that "like produces like," or, in more correct phrase, defects as well as beauties are hereditary.

RIDDELL'S STOVES.—Many correspondents inquire where these (mentioned by "W. T. G.," in our paper of the 25th ult.), can be obtained. Any one who sells them will find advertising in our columns worth their attention.

NAME OF PLANT (H. S. E.-B.).—Your "*Gage d'amour*" is *Saxifraga sarmentosa*, or Chinese Saxifrage. It was introduced from China as long since as 1771. It will do very well suspended as you propose.

POULTRY AND BEE-KEEPER'S CHRONICLE.

POULTRY SHOWS.

JANUARY 16th and 17th. **POULTON-LE-FYLDE.** *Hon. Sec., Mr. J. S. Butler.* Entries close January 1st.
JANUARY 25th and 26th. **CUMBERLAND AND WESTMORLAND.** *Secs., Mr. M. W. Hastwell and Mr. W. T. Armstrong.* Entries close January 12.
JANUARY 30th and 31st. **ULVERSTON.** *Secs., Mr. T. Robinson and Mr. J. Kitchen.* Entries close January 10th.
FEBRUARY 6th and 7th. **LIVERPOOL.** (Poultry and Pigeons). *Sec., Mr. A. Edmondson, 4, Dale Street.* Entries close January 19.
JUNE 4th, 5th, 6th, and 7th. **BATH AND WEST OF ENGLAND.**
N.B.—*Secretaries will oblige us by sending early copies of their lists.*

MANAGEMENT OF POULTRY IN SEVERE WEATHER.

THE changes in the weather have been trying for poultry, but there has been nothing that healthy, well-conditioned birds cannot well bear. The sudden thaw of the 30th did good by getting rid of much, if not all of the snow. This is very trying to fowls, in common with everything else that covers the surface of the earth; but that which kills birds in a severe and long-continued frost, is the lack of water, care must, therefore, be taken that this want is supplied in all yards. Now, also, little indulgences may be granted in the way of food; scraps of meat from the stock-pot, soaked pieces of bread mixed with steaming boiled potatoes, or, failing other stimulant, well steeped in strong ale. All these will be gratefully received by fowls. They will often now be found in their houses or roosting-places in the daytime: therefore, let these be well cleaned out as soon as the fowls leave in the morning, and have the doors and windows open till the afternoon between two and three. Give all possible shelter to sitting hens that the eggs may not be chilled. Let your young chickens have plenty of beer to drink, and, above all, let them be fed two or three times after dark and before light.

PRIZE LISTS OF POULTRY SHOWS.

SEEING it stated in THE COTTAGE GARDENER of the 25th ult., that it was probable many new Exhibitions of Poultry and Pigeons would be held during 1861, I should like to offer a few remarks with regard to the latter, in order to prevent the stereotyped plan of the prize list being continued.

In the poultry classes the first shows of a year are generally chickens bred that year, and in the great exhibitions a class for both old and young birds is given, why should not the same rule

be adopted with regard to Pigeons? It has been but once tried—I believe that was at Portsea, and the Show was most successful, a finer collection of young birds, especially stout birds, never before having been exhibited. It may be argued that there is difficulty in telling the age, and thus frauds are liable; but if the penalty attached to discovery—viz., exposure of name and exclusion from other exhibitions were inflicted, it would, or ought to, prevent it. My reason for urging this point so strongly is, that all may have a fair chance, and to give encouragement to the rising fanciers. Now, it is well known, only better not mention names, there are persons who have some fine specimens of Carriers, Powters, &c., and it will take some years to beat them. These same birds keep a-head at every Show, and as young Carriers and Powters cannot contend with old birds, it disheartens the rising generation, and the exclamation is, "What is the use of sending? I know Mr. ——— will, and I cannot beat him and have no other chance."

Birds can be, it is true, purchased from these strains, but time is required to enable their progeny to compete at all. Now, by having a class for birds under one year old, all this will be obviated. Powters, Carriers, Dragons, and Barbs, are easily known if young or old, and such experienced Judges as we have now would not be much deceived as to the ages of the other sorts. I am sure from the entries to the Portsea Show, that the scheme would answer, and the classes be well filled, and it would give inducement to beginners to persevere.

As a subscriber to your paper I have ventured to make these observations, trusting that through the medium of your influential columns you will bring it to the notice of the Secretaries of Exhibitions of Poultry and Pigeons.—A YOUNG STOUT BIRD.

THE CANARY AND THE BRITISH FINCHES.

(Continued from page 154.)

5.—THE TWITE (*Fringilla Flavirostres*).

German, Berghänfling. French, Petite Linotte, La Linotte de Montagne.

THE Twite, also known as French Linnet, Mountain Linnet, and Moor Linnet, is, probably, the same bird the Scotch call the Muir Lintie.

Although not a rare bird, yet it is not very common in the south of England, still a specimen can often be obtained in the London bird-shops, where they are not accounted of much value, a few being occasionally caught in the autumn and winter; but I have not heard of their being taken in any number.

Bechstein does not seem to have seen the bird, which is only known to him through Latham's description, from which he fancies it is only a hen or immature male of the common Grey Linnet. Had he, however, seen it he could not have mistaken it, as it is quite distinct from that bird; and though some naturalists are somewhat confused in their ideas respecting its identity, yet those that know the bird admit its distinctness, which is well known to the London bird dealers.

I have heard they are common on the Scotch moors, and that they breed among the heather.

They are a trifle smaller than the Linnet, and rather darker and duller in plumage. There is less white at the base of the quill-feathers of wings and tail; neither is the breast so red, the cock's having only a rosy blush, but he has the peculiarity of a red spot on the rump. The beak is very different to that of the Linnet's, being shorter, slightly flattened at the sides, and of a yellowish colour with a brown tip, under it there is a black mark, giving the head a slight resemblance in shape to that of the Redpole.

They are more lively than the Linnet, but not so active as the Redpole, and appear to be an intermediate species between them, though differing much from either.

Their song is much inferior to that of the Linnet, yet it is lively, not devoid of sweetness, and often rehearsed. The birds are docile and merry, and no collection of British Finches would be complete without one or a pair.

At the Crystal Palace Show, 1859, a Hybrid or Mule, between Twite and Canary, was exhibited. It bore much resemblance to a Grey Canary; but the head and beak were characteristic of the Twite.

I think this bird has sometimes been mistaken for the greater Redpole.—B. P. BRENT.

INFLUENCE OF THE QUEEN BEE IN A HIVE.

MR. W. C. HARBISON, has published in America, a work entitled "Bees and Bee-keeping." He styles himself "a practical apiarian." The following is a summary of the results of his observations upon the internal economy of a hive:—"First, that no sovereignty is exercised by the queen over the other bees in the colony. Second, that the entire economy of the colony is directed and executed by the worker bees, including to a very considerable extent, the actions of the queen. Third, the only necessity for the presence of the queen is to supply the colony with eggs. Fourth, that the time of laying eggs, and the number required at any given period, is controlled by the workers, and not by the queen. Fifth, that no eggs are deposited in the queen cells by the queens. Sixth, that no homage or filial affection is rendered or manifested for the queen by the workers, other than from the instinct of self-preservation."

[I have long thought that the degree of sovereignty exercised by the queen bee of a hive has been considerably over-estimated; but I am not prepared to go all lengths with Mr. Harbison. There can be no doubt that a swarm of bees will follow their queen, and that they pay her a very marked homage which they do not render to one another, or to a strange queen. On the contrary, I have seen a queen bee stung to death by a worker in less than a minute after her introduction into a strange hive from which the native queen had not been removed.—A DEVONSHIRE BEE-KEEPER.]

OUR LETTER BOX.

POULTRY-HOUSE (*E. W.*)—If you send seven postage stamps, with your direction and an order for "The Poultry Book for the Many," you will find, on consulting its page 9, a poultry-house just adapted to your wire-work, and as it is drawn to a scale, you will at once see the size of the houses, &c. If you do not wish to exhibit, but merely to keep up a supply of eggs and chickens, have six Cochins-China pullets, and a coloured Dorking cock. Get rid of the hens, and have six fresh, early-hatched pullets every year.

COCHIN-CHINA COCK DISEASED (*A Young Amateur*).—He is in the last stage of ulcerated lungs. No treatment will save him.

SPANISH AT THE KENDAL POULTRY SHOW.—Mr. Rodbard's chickens had the silver cup awarded them, and not Mr. Teebay's adult birds, as erroneously stated in our report last week.

FROST-BITTEN COMB (*E. C.*)—It should have been washed with cold water as soon as noticed. Now, the best treatment will be to keep the bird in an outhouse or other place not hot, but where the temperature will not sink to 32°. The comb and wattles having a white eruption upon them, it will be safe treatment to anoint them with sulphur ointment which you can obtain from any chemist. Keep the bird generously. See what we say to-day about feeding in severe weather.

HENS DYING SUDDENLY (*Idem*).—The keeper's hens die of apoplexy, occasioned by a blood-vessel bursting on the brain. They are too fat, and the free access to the flesh-pots and other putrid scraps of the kennel, tells the cause. Less animal food would remove the evil.

PLUMAGE OF GOLDEN POLANDS (*Novice*).—It is not necessary your Poland cock should have a black tail, but his tail-coverts should be black in the centre, edged with the colour you have enclosed—i.e., a rich orange. The wattles are serious. If they are only imaginary appendages, and called wattles because they "grow where the wattles ought to grow," then they may be passed over; but if they really deserve the name, they are a great objection. Taking your description as a fair one, we should advise you to exhibit him. We are not at all sure you have not described a very beautiful tail on a good bird.

FEEDING POULTRY (*Idem*).—We do not approve your feeding, and it must be hard work for the barley to keep body and life together in this weather, with no better helpmates than rice and Indian corn. Give your whole corn at mid-day, and feed on ground oats or barley meal morning and evening. You will be surprised at the improvement in your fowls. Indian meal is bad feeding, but rice is worse. Those who have tried ground oats will be easily able to prove that they are more economical than the two former.

GESE AT BIRMINGHAM (*A Subscriber and Exhibitor*).—We shall very readily publish any rules and criteria of excellence which you may consider desirable to be followed by judges in awarding prizes to Geese exhibited, but we decline inserting criticisms which would make many parties dissatisfied by merely pointing out why it is thought B.'s Geese were better than A.'s. Besides, it is evident in the present case that four first-rate judges thought otherwise.

ALMOND TUMBLER (*Cheshire*).—Mr. Eaton's book on the Pigeon gives much information, but it is very dear and very ill-arranged. If you send twenty postage stamps to our office, and order "The Pigeon Book" to be sent to you, you will find in that all that is needful.

ANTWERP RABBITS.—If Louis Doubois, who mentions these attaining the weight of 14 lbs., will advertise when he has any to sell, he will meet with several customers who have applied to us for his address.

WEEKLY CALENDAR.

| Day of M'th | Day of Week. | JANUARY 15—21, 1861. | WEATHER NEAR LONDON IN 1860. | | | | Sun Rises. | Sun Sets. | Moon Rises and Sets | Moon's Age. | Clock before Sun. | Day of Year. |
|-------------|--------------|--------------------------|------------------------------|-----------|-------|-----------------|------------|-----------|---------------------|-------------|-------------------|--------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | |
| | | | | deg. deg. | S. | | m. h. | m. h. | m. h. | | m. s. | |
| 15 | Tu | Fuchsias. | 29.874—29.716 | 51—31 | S.W. | ·24 | 2 af 8 | 18 af 4 | 34 af 9 | 4 | 9 49 | 15 |
| 16 | W | Azalea indica. | 30.164—30.138 | 48—26 | S.W. | — | 1 8 | 20 4 | 42 10 | 5 | 10 10 | 16 |
| 17 | Th | Daphne odorata. | 30.170—29.973 | 46—13 | S.E. | — | 0 8 | 21 4 | 50 11 | 6 | 10 30 | 17 |
| 18 | F | Hypericum ereticum. | 29.801—29.602 | 39—14 | S.W. | ·09 | vii. | 23 4 | morn. | 7 | 10 49 | 18 |
| 19 | S | Pogonia glabra. | 29.679—29.559 | 47—0 | S.W. | ·11 | 58 7 | 24 4 | 0 1 | 8 | 11 8 | 19 |
| 20 | SUN | 2 SUNDAY AFTER EPIPHANY. | 29.334—29.225 | 48—17 | S.W. | ·32 | 57 7 | 26 4 | 10 2 | 9 | 11 25 | 20 |
| 21 | M | Sun's declin. 19° 50' s. | 29.227—28.782 | 49—34 | S.W. | ·16 | 56 7 | 28 4 | 20 3 | 10 | 11 42 | 21 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 42.5° and 31.0° respectively. The greatest heat, 60°, occurred on the 19th, in 1828; and the lowest cold, 4.5° below zero, on the 19th, in 1838. During the period 141 days were fine, and on 97 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

LITTLE more than we have previously recommended can be done in this department during the present state of the weather. Wheel manure on the borders and quarters where it is wanted. *Beans (Broad)*, soak them in warm water for six or eight hours. Sow in pots or boxes, to be got forward in heat, then removed to a cool frame or house to be hardened off before planting out. *Cauliflowers*, if the plants are injured by the frost a sowing should be made directly, and forwarded in a warm place. *Cucumbers*, prepare dung for the main early beds. Make a small seed-bed for raising the plants. *Lettuce*, the same as advised for Cauliflowers. *Onions*, look over them, and remove all that are any way decayed. *Peas*, to be treated as advised for Broad Beans.

FRUIT GARDEN.

The pruning of orchard trees is an operation that is too frequently neglected, and the result is that the heads of the trees get so crowded with wood that fruit can only be expected to be produced on the extremities of the outer branches, and the thicket of worse than useless spray which the trees have to support is injurious both to the size and quality of the fruit, and also to the general health of the trees: therefore it is advisable to give the trees a careful pruning, thinning out the inner branches with a liberal hand. Prepare soil, &c., that may be wanted for planting young trees, and get it laid down where it may be needed. The planting to be deferred for a month or five weeks longer. Also, proceed with the pruning of fruit bushes, &c., when the weather permits.

FLOWER GARDEN.

Any of the shrubbery borders that may require a dressing of fresh soil, leaf mould, or other such light vegetable manure, to be attended to while the weather is favourable for such work. Avoid wheeling on grass. As soon as the frost leaves, any ornamental planting necessary should be proceeded with. Clean, dress, and dig borders, and renew soil where necessary in the beds. Sow seed of *Anriculas* in pots or pans, to be protected in a cold frame or under a hand-glass. *Pinks* do not suffer much from still frost; strong cold winds are far more injurious. Any protection that can be given to break this force will be attended with advantage—such as branches of fern placed on the northern or eastern side of the bed, or between the rows.

STOVE.

As the late severe weather has necessarily caused strong fires to be kept up, it is advisable to see that none of the plants are suffering for want of water; for, although the surface of the pots may appear moist, the bottom roots may, nevertheless, be perishing, let a few plants, therefore, be turned out of the pots and examined, especially at the hottest part of the house. A few *Achimenes*, *Gesneras*, *Gloxinias* for early blooming may be started, being watered and placed in a hotbed-frame or forcing-

pit. When they begin to grow, to be turned out of their pots, and each root potted singly in a small pot in a mixture of leaf mould, loam, and sand. The pots to be returned to heat until the plants have taken fresh root, and then to be taken to the stove again, and repotted as often as they may require it. Dry off *Gesnera zebrina*. Propagate *Clerodendrons* by cuttings of the old wood, and start a plant of each kind for early blooming.

GREENHOUSE AND CONSERVATORY.

The nearer the temperature of the greenhouse can be kept at 40° the better, but never in severe weather to exceed 45°; and by such treatment the plants will require to be watered but seldom, and then only when the plant is flagging for want of it. Pot *Amaryllids*. Remove potted Cape bulbs to heat. Repot *Cinerarias* and *Pelargoniums*. Pot *Tropæolums* in full-sized pots at once. A few of the most forward *Fuchsias* may now be pruned and started in heat for a stock of cuttings.

FORCING-PIT.

Keep the temperature, with a moderate supply of moisture, by night at 60°—let the maximum be 65°. Get in Moss and other *Roses*, to keep up a regular supply; also *Persian* and common *Lilacs*, *Azaleas*, *Lily of the Valley*, *Hyacinths*, and other bulbs, hardy *Rhododendrons*, *Daphnes*, and *Deutzias*.

PITS AND FRAMES.

Examine your stock, and such plants as you are short of should now be placed in a gentle heat for the purpose of exciting their growth for cuttings. *Verbenas*, *Petunias*, *Lobelias*, *Heliotropes*, and other such plants suitable for filling beds, borders, and baskets, to be looked after in good time. The various composts that will soon be required for potting purposes will be benefited by being frequently turned over during dry frosty weather. Such composts should not be allowed to become wet either from exposure to rain or snow.

W. KEANE.

DOINGS OF THE LAST WEEK.

As I expected, the thaw was arrested and a keen frost set in on this evening, eight days ago. The frost has not yet been so severe as on Christmas-eve, and the following day; but though we have had frequent fallings of snow, we have not had above one inch and a half altogether, and the thermometer several mornings has been 16° and 18° below the freezing-point. Saturday night and Sunday night have been very severe, and this morning we have 17° below freezing, and a thick rime and a south wind, and during the day a bright sun, the south wind as yet brings no sign of a change. In such weather it is worse than useless to send men to work at anything out of doors, that they cannot keep themselves warm and comfortable at. If thorough-going workmen are desired in fine weather, their health and comfort must be considered in cold, wet weather. A workman worth having knows and feels that, and will set accordingly. The outside work, therefore, has been confined to a little wheeling, wood-splitting, cutting up twigs for lighting fires, making a bed chiefly of leaves for early *Cucumbers*, and sowing another

bed, so made but with half the quantity of materials and covered with six inches of earth, with Early Horn and small Dutch Carrots, and frame Radishes, and a few Cauliflower seeds. The Radishes will be thinned out if too thick to let the Carrots up, the Cauliflowers will be pricked out, but we make it a point to leave the Carrots very thick. As soon as they are half the size of a man's thumb we shall begin to draw, and the quantity thus obtained from a two-light box is immense, and how nice and sweet and crisp they eat. The Radishes will succeed the September and October sowings under glass protection, and will come in crisp when the older ones are getting hard and stringy. I have found for many years that such things sown in the first week of January, will beat, generally in time and always in quality, those sown a month or six weeks earlier. Asparagus has been uncovered when there was a bright sun, to get it a little green. In sunny weather Asparagus may be cut and placed in a hothouse or warm greenhouse to give it colour, but in the late dull weather that did little good. In resorting to that plan do not put the ends in water, that will make it tasteless and insipid; but set the ends on damp moss and a little of the same moss an inch or two up the stems. A very cold house to place it in after being cut will be apt to make it eat tough and hard. The only thing else done out of doors, was protecting with straw the outside of several brick pits. We did not do it very thick as you may judge, when for three pits fully fifty feet long each, the back wall of one being four feet above the ground, and the other two three feet and a half, we covered the backs and ends with nine trusses of Wheat straw. The straw is put neatly against the wall, and secured in the highest pit by three strings and nails, and in the other two by two strings. Many people lose plants on cold pits because they think *nothing of the walls*. The frost will go much quicker through a nine-inch wall, than through a wall of dry earth of the same thickness. These pits will soon have less or more heat given them, and this slight defence of dry straw against the wall is a great advantage. It alike keeps cold out and heat in, and looks neat into the bargain. I have seen on cold mornings when such pits were moderately warm inside, boys sticking their hands underneath the straw and finding thus a very comfortable warming-pan. In addition to this, the cold pits containing Geraniums, Calceolarias, &c., have been left to themselves, no uncovering, light, or air-giving; but the last thing in the evening and the first thing in the morning the covering was forked over, one man going along the back and another along the front merely breaking and changing the surface all along. Such straw-covering of walls as I have alluded to above, would not be half sufficient for a cold pit in such weather. I told many last year that they lost their plants, because with abundance of covering for their glass, they neglected the wall through which the frost easily penetrated.

Inside a few Cucumber seeds were sown in a mild heat to bring on for bed, as we have given up having them in winter for some years, and I find that sown this month or the beginning of the next, they will beat those sown earlier. Strange to say, though generally successful with Cucumbers, I was not up to the mark last year, though Melons under much the same circumstances did extra well. The late-house of Vines had the bunches cut with a piece of wood attached; but even then I never could keep them long so nice and plump as when hanging on the Vine.

The Vines were pruned, washed with warm soap water, and when dry painted with a mixture of clay, sulphur, soft soap, and water, and then tied longitudinally along the front of the house inside, that they may be kept cool and equal in temperature at breaking time, and be out of the way before then. The walls are being cleaned to-day (January 8), and, ere long, the house will be ready for plants. I also generally smoke such houses before proving with the sulphur burning, but no green thing must be in the house. Potatoes just beginning to spring in a Mushroom-house, have been placed two or three in twelve-inch pots, and as soon as they get to the surface of the pot, they will be placed in light. These generally produce a few weeks earlier than those in beds. Plants in the houses have been carefully examined as to watering. With two or three exceptions in bright sun, and that only for a very short time, no air has been given. In such weather the doors and laps give quite enough. Provided the *heating medium during the day is low and cool*, a little sun will not affect the houses much, and a little rise from sun heat does good, and never so much harm as letting in a draught of cold, dry, frosty air. A fine thing, indeed, to go to the expense of keeping Mr. Frost out, and then tell him to come in whenever the sun peers out for a quarter of an hour. Besides

all these, flower-pots have been washed with warm water in a warm stokehole, and the pots kept in the warm until they were dried. Cuttings of many things have been put in, though in better weather we might have delayed a few weeks. Tallies have been made, sticks made and put into small bundles according to size. Spare sashes mended and painted, and straw covers repaired and new ones made. Something must be done with Strawberries to-morrow, but of that next week.—R. F.

NEW SYSTEM OF HEATING PLANT-HOUSES.

THE first new move for the new year which I have heard, for the gardeners, was on Twelfthnight, and from one of our own number, a nobleman's gardener, and one who is a first-class man, a Fellow of the Royal Horticultural Society, and a right man in the right place at a Christmas party, where I then had the advantage of a hurried conversation with him on the questions of the season, the severe frost, the effects of it on the kitchen garden, the difficulty of obtaining seeds true to name, the unfitness of the Fluke Potato for the sandy soils of Surrey and Middlesex in the valley of the Thames, the education of gardeners, and the changes in the ideas of men of our calling from the days on which both of us had paid "half price" to see the last half of Rob Roy acted in Inverness, Perth, and Edinburgh. "But," said he at last, "why is it you never come to see my new heating scheme?" "By-the-by, how has that system answered this hard weather? and how do you like it? and is your mind now settled on its working? for I should like very much to have a concise account of it for THE COTTAGE GARDENER some of these days. But you great dons spend so much time at this season with your desserts, Diana Vernons, housekeepers, cooks, and factors, that you have no time or relish for writing for the good and guidance of others who are less fortunate and more busy than yourselves."

Well, he did tell me that his new scheme for heating was a remarkably good mode, the cheapest and best thing that had yet been done for heating plant-houses from which the frost is merely to be kept. I have not seen the arrangement yet, but I heard of it at the beginning of the frost of 1859; and this is the second season of the trial, and the first time that I have seen the author of it, at a Christmas merrymaking, since he hit on the plan. I book it thus early without references or premeditations, in order that he may hear more about it, and remember that when he is "asked" for the first time, let alone the legal run of asking, he cannot slip out of the engagement he made at that party. So here it is as far as I can recollect and arrange our conversation; but please to recollect the time and the circumstances under which the conversation took place, and that we were often interrupted and called to order and to other things during the course of it.

Well, it is an entirely new edition of the Polmaise system of heating, but quite distinct and different from any variety of Polmaise proper. The groundwork of the Polmaise system of heating was and is the sucking back of the cold air in a house, to pass it through a heated furnace, and to return it to the same house on a higher level and hot enough to keep the house at the required temperature, and the whole air inside in motion all the time. Every practical man who gave a thought to that system, unless his thoughts were prejudged for him, or prejudged by some one or something else, acknowledged that Polmaise was the nearest to nature and to perfection for heating and for ventilating plant-houses, of all the plans and methods hitherto in practice. But, after all, it was at last tacitly acknowledged also that the application of the principle was on a baseless foundation.

This new system of my friend's does not suck one particle of air from a beautiful conservatory in which he works it. That conservatory is attached to a nobleman's mansion. The size of it I hardly know, but I have seen it

some years since, and if I recollect it is from 40 feet to 50 feet long, about 20 feet wide, and about the height of 20 feet or so. The whole front of it is upright glass down to the level of the paths. The roof is a span, and the back wall and the two ends are walls of parts of the mansion, and one or more doors from it open into the living-rooms. Heliotropes trained against the back wall, and Geraniums trained up the pillars between the front lights, and quite close to the glass, look now just as fresh as the plants in the centre bed of the conservatory. The same safety, and a rude degree of health, is also reported of the plants after last winter. And in confirmation of my friend's estimate of his new mode of heating, he told me that he will next season change the old-flue system, by which a second conservatory attached to the same mansion is now heated, to this plan.

Some one in the last century had begun this system where it now is, and failed with it. Others who are dead and gone, and some who are now alive and well known to fame, have also had a finger in it with no greater success, and it stood still for the last twenty years or more, and was well nigh forgotten till "a first-class man" got hold of the rudder and took the lugger, not to haven, but to pieces, and rebuilt it on what appears to be a new principle—at all events on a good principle, and the cheapest principle I ever heard of for heating a plant-house; for all this time with the frost often at zero, he burns nothing but cinders and slack coal mixed for his furnace. He bought twenty chaldrons of cinders from a dustman at the beginning of the season of fires for 6s. the chaldron, including delivery. To four bushels of these cinders he adds one bushel of slack coals—that is, the small dust that is screened out of the London sack coals, the price of which, if he told me, I forgot, but it is not over one-half of the price of common coals about London, and this conservatory is not fifty miles from London.

The furnace holds two bushels of this mixture at once, if it is well packed and beaten down as when making up the fires for the night. The combustion is regulated by ventilators and a damper at the neck of the chimney. And the capacity of the furnace seems to be equal to double the work required; for if one of the doors from the conservatory is opened into the living-rooms, the whole mansion could be sensibly warmed by the current of warm air rushing in from the conservatory.

The furnace is down below the mansion, but not in the cellars. There is an arched or bricked-off compartment separate from the cellars and devoted to the requirements of the furnace, which is fireproof; but all that was done, or may have been done, soon after the battle of Culloden and the dispersion of the clans from whom we have the author of this lucky hit. Many things went wrong at that period besides the huge iron cylinder, or whatever it was, which would not work in that vault, which had to be put right by "Fellows" from the fallen race, of which our present furnace is the last instance within my knowledge. It was some very expensive project at the beginning, with more iron about it than any of our present boilers require, except piping; but from some mistake in the setting the thing would not go or draw at all. All that iron had to be removed and sold for waste except one large plate, which is made to answer the purpose of the thick iron plate in Polmaise. All the rest is different, but the original channels of the hot air from the furnace to the floor of the conservatory have not been altered. There are two channels or air-flues going from the furnace, but join ere they reach the conservatory. The floor of the conservatory is ten or twelve feet or more from the top of the furnace; but that is not a necessary arrangement, as the very same furnace would have acted just as well if it had been on the outside, and on the level of the floor of the house.

Now, any good bricklayer from here to Berwick-upon-Tweed could put up such a furnace, if you read to him

what I am going to say, or if he can read it for himself all the better and the surer he will make the job; but as it is possible that I may not have caught the full and precise meaning of my friend's verbal descriptions, wait till he is "asked" a second time, for I make this his first time of asking to explain how he did it, if I have failed in any of the particulars.

His furnace being of double the power required is no criterion to the size of the one which I mean to get made for myself, or to one that you might like to try. The expense need be no more than the bricks and mortar and the man's labour, if we should not hit off the thing at the first trial: therefore, for a sort of guide, let us say the furnace or fireplace to any greenhouse now at work, or that of any other plant-house, will be just the right size for this system; but as it is more safe to have more power than one seems to need, say the new furnace is to be one size larger than the one of which you take for your model; let the bricklayer set the new furnace as if he were making one to set a boiler on; the ash-pit to be of good stock bricks, and the sides of the furnace above the fire-bars to be lined with firebricks, the length, and depth and width of the fireplace as for a boiler of small, medium, or large size, and the top to be covered with an iron plate, or it may be arched over with firebricks if that is less expensive than a stout iron plate. Over the plate or arch is to be a hot-air chamber of the same dimensions as the fireplace, but one course of bricks higher. A hot-air flue six inches square, is made from the farthest end of the air-chamber to the greenhouse, and a ventilator is made in the front of the air-chamber to admit external air to be heated in the chamber, and then to pass through the air-flue to the greenhouse. The ventilator to slide like a damper to admit more or less of air. The flue to rise slantingly from the fireplace, and to be carried across through the air-chamber to near the front, so as to get all the heat from it for the hot-air chamber, and then to pass it into a chimney over the front corner of the air-chamber, right or left, as is most convenient for getting up a chimney. The one from which I describe passes into a chimney belonging to the mansion. The flue need not necessarily pass through the air-chamber. Suppose this furnace to be at one end of a greenhouse outside, the flue might be carried inside and across the house and up the back wall. The object either way is to get the heat appropriated as much as possible.

The furnace is yet supposed not to be connected with other brickwork, but from the level of the foundation for the ash-pit a wall is built all round the furnace, and six inches from it, up to the level of the iron plate, and then covered over with a course of bricks set across the opening; thus a hot-air chamber is made all round the furnace as well as over it, and the two air-chambers do not communicate one with the other, but an air-hole is left at the farthest end of the ash-pit to let in the external air into the side chambers or lower chamber, and a flue from this lower chamber passes also to the greenhouse, and rising gradually till it meets on a level with the upper flue from the upper air-chamber. And thus, all the heat from the brickwork round the fire, and from the ash-pit, where the heat from the fallen ashes is often considerable, is caught in the chambers; and the cold air from without, passing over the ash-pit and in through the ventilator through the upper chamber, takes all this heat into the greenhouse.

That is precisely the plan and principle which my friend has adopted, and found in this hard winter, and in the long one which preceded it, to answer most perfectly; and when you hear his name most of you will rely on his judgment, for amongst us he is allowed to be one of the best practical men in our line; but as I never name any one in these pages without consent, I cannot break the rule now. He assured me the heat in his conservatory was as uniform in every part of the house as if it were from

hot-water pipes all round, and just as wholesome for the plants, as far as he could make out from their appearance.

What seems strange, after our attempts at Polmaising, is that the cold air in the conservatory does not require drawing off, nor hinder the access or force of the current of hot air. There are two brass stars, or circulars, fixed at one end of the house, in the stone which forms the paths of the conservatory, through which the currents of hot air rise; and these currents, when the ventilator below is full open, are sufficient to agitate crinoline dresses passing near them: but there are no attendant disagreeables, and there is no apparent sense of the air being too dry, or in any way to differ from the usual run of hothouses, although no means are taken to soften it by evaporating-pans or other plans. But in using this system for early forcing and for stove heat, the air-chambers would necessarily require to be made much hotter than they need be for the safety of greenhouse plants, and in that case no doubt evaporating-pans would be requisite to keep the air moist enough for free healthy growth.

At all events, this is a most simple plan for all greenhouse and conservatory work, a very safe and cheap one, and a great stride for the amateur. To prove that on the spot, the second conservatory at the same place, and which is less than the one which is heated by the hot-air system, has cost in coals during the last month just four times more, by the old flue system than the other, and the trouble of attendance on the fire is twice as much against the flue. Think, also, of a first-class gardener, after satisfying himself with two seasons' experience, making up his mind to do away with the old flue system after this winter, and taking to the warm-air circulation instead and in preference to any other system to which he has been used, after having had as much practice, and more extensive commands, than even your humble servant. But, as I have just said, let us wait as we are till he sees this, and hear what he himself has to say about it, or if he has any suggestions for an improved application of the system.

D. BEATON.

STOVE ORCHIDS.

(Continued from page 210.)

EXTRA POINTS OF CULTIVATION.

UNDER this head I have to describe some peculiar methods of growing a few species which I would not notice in the general instructions before given.

CAMAROTIS PURPUREA.—A most beautiful species, introduced by Mr. Gibson from the foot of the Khoseea Hills in India. The best way to grow it is to procure a straight, thick branch of Oak, and tie round it a thick covering of long moss, and then tie several shoots of the Camarotis round it. The shoots send out roots, which soon lay hold of the moss, and root into it prodigiously. During the growing season the plant should be kept very moist with the syringe: it will grow stronger by this treatment than by any other. It should then have a period of rest, and will flower in the spring most profusely.

CATTLEYA CITRINA.—Here, again, is a lovely fragrant flower: the plant that produces it requires a peculiar treatment, which if not given the plant will die. That treatment is in accordance with the habit of the plant in its mode of growth. The generality of even Orchids send their shoots upwards; but this species sends them downwards: hence it is necessary to humour it by fastening it on a log with the last-made pseudo-bulb underneath. So placed on the log, the plant appears to the uninitiated to be, as it were, turned topsy-turvy, or upside down. I have proved, however, repeatedly that grown in any other way the plant will not long survive such wrong treatment. In every other point of culture treat it the same as its congeners.

EPIDENDRUM BICORNUTUM.—This fine species when well grown is almost as handsome as a Phalaenopsis; but it is a rather delicate plant. The only way I could succeed with it was to place it on the upper end of a thickish, round, short branch cut level, and fasten it to the block with fine wire, on a thin bed of moss. When grown in a pot or on a log in the ordinary way the young shoots invariably perished, and in time

the plant died, as a matter of course; but when planted on the top of a branch the young shoots grew and perfected pseudo-bulbs, which in due season flowered well. The branch was not suspended, but placed upon a shelf not far from the glass.

EPIDENDRUM RHIZOPHORUM.—This species has very long, slender shoots, and the brilliant flowers are produced near the top. To bring them within view the plants should be grown in a wide, shallow basket lined with moss, and filled with the usual compost. Then every shoot should be bent down, and coiled round and round within the basket, which should be suspended near the glass. In time there will be a dense mass of shoots, the ends of which will just turn up a few inches, and thus when in flower there will be a large number of umbels of scarlet flowers truly splendid. It is a hardy species, and will bear a low temperature in winter when at rest.

LELIA SUPERBIENS.—Another odd-growing species. The peculiar treatment that it needs is simple enough. It neither requires a pot, a basket, or a log. All that is needful is to suspend it from the roof without anything at all but the wire to hang by. In that way the large splendid specimen lately in the gardens at Chiswick was cultivated, and no plant ever grew better, or produced finer flowers and new pseudo-bulbs annually. Whoever procures a plant of this fine species should profit by this example, and treat his plant in that peculiar way.

PAPHINIA CRISTATA.—A West Indian plant, producing large and beautiful flowers. It requires a peculiar treatment to grow it well. Take a wide, shallow pot, drain it well; then have ready a number of square-cut pieces of fibrous peat; with these form a wall, as it were, on the margin of the pot, and fill in the inside with rough peat and sphagnum moss; then place round a second layer of the square pieces, drawing them a little inwards, and fill up again with the compost. Proceed so till the space at the top is just large enough to hold the plant; then place it on it, and fix it there with more square blocks of peat. It will then stand upon, as it were, a pyramid of peat, and will soon grow quickly and flower freely. So placed it will bear a free supply of water, which it needs to grow satisfactorily. It is a lovely species, worthy of all care.

RENANTHERA COCCINEA.—An old, well-known plant, and very splendid when in flower, in which state, through mismanagement, it is rarely seen. It may, however, be flowered annually if the following culture is adopted. I suppose the reader has a large plant that seldom, if ever, blooms. In April procure a large wide-mouthed pot, and also three or five long branches of Oak, or the common Acacia, or branches of Cork—any of these will answer. If the plant is small, three branches will do; if large, five may be necessary. These branches should be six or eight feet long. Fix them in the pot firmly by packing round them broken pots mingled with sphagnum moss; tie them together fast with some strong wire at the top; then take the plant with all its roots entire, cut into lengths, and place them round the branches at equal distances, fastening each to each corresponding branch. Do this just at the commencement of the growing season. Place the pot then in a situation where it will not be knocked over, and where it will have plenty of light and air. Keep it freely syringed, and in a warm temperature—say from 70° to 80°. It will grow freely, and produce short joints and large healthy foliage. Towards the end of summer reduce the heat, and give less water, in order to check growth, and give a degree of rest. It may not flower the following season, but by giving liberal treatment that year, and a rest in the winter, it will almost be certain to bloom every year afterwards. Renanthera blooms generally in the autumn.

SCUTICARIA STEELII.—In order to grow and flower this fine plant it should be fastened to a thick, short log, and that log placed just with a pot filled with moss. Its long leaves grow downwards, hence it is necessary to suspend the pot and log from the roof of the Orchid-house. The stems are short, and on them the large cream-coloured flowers, blotched with crimson, are produced. It is a native of Demerara in the hottest part: hence it requires a hot damp atmosphere when growing, and should be liberally syringed when in that state. It, however, should be kept drier, and cooler during the resting season.

VANDA TERES.—This species has round leaves placed on an upright, slender stem, from which, towards the top, the large, handsome flowers are produced. In order to form a bushy plant the long shoots should be shortened into lengths, and trained upwards, either to an upright round trellis or to a stout branch. The shoots should be placed round the support at equal distances. The lower parts of the shoot will soon break

buds, and form new shoots. By doing this you will have a low, dense bush; each shoot of it will produce several flowers, and thus the plant will form a handsome specimen. Like the rest of the genus, it requires a high temperature and plenty of moisture when growing; but less heat and moisture after the growth is perfected. It flowers during the dry season in India, and, therefore, will flower here just before it is put into a state of rest.
(To be continued.) T. APPLEBY.

METEOROLOGICAL NOTES ON THE YEAR THAT IS PAST (1860).

As all parties agree in describing the year that is past as a remarkable one, it is certainly worthy of our notice to show in which way it has differed from those before it. And it is to be hoped the pages of THE COTTAGE GARDENER will, during the next few weeks, record observations more or less similar to those now given, but from districts widely apart; as, by the various meteorological notes that may be received, some useful deductions may be made—not that it is necessary to enter so far into details as I have done, but simply to give the outline of what the season has been elsewhere. But my notes being taken monthly, I hereby give a few extracts apart from the tabular matter below.

January.—General character mild, with a full average rainfall and unusual high winds, resembling March. The thermometer only once sinking as low as 25°.

February.—Very changeable rather than severe: frost, thaw, rain, wind, and dry weather rapidly succeeding each other. The barometer, as might be expected, changeable also, but often high.

March.—Similar remarks apply to this month, with the addition of more wet days, and, on the whole, fewer high winds than we usually have in March.

April.—Unusually cold and wintry, for on the 24th and 25th of the month, the snow and rain which fell on these days amounted to 1·34 and ·67 in. respectively; and so late was everything that Asparagus, which usually appears on the open ground about the 10th, did not show itself until 22nd; and the cuckoo, which is usually heard about 16th, was not noticed till 27th. The last mornings of the month were also frosty.

May.—The general features of the month dull and cold, the third week, however, much finer. The first expanded Apple blossom that I noticed was not until 10th May, just thirty-three days later than the same of 1859. Other things were also late. The rains, however, improved the grass crop on light lands.

June.—This is universally regarded as the wettest month ever known in Kent at the same season, accompanied with a dull cheerless atmosphere and little or no evaporation. The progress of all but the coarsest vegetation was much retarded. Subjoined is the maximum average day temperature of June for the last four years; and as this month usually stamps the character of the crops for the season, we need not be surprised at the result when we examine the figures.

June 1857, average maximum temperature 81° nearly.

" 1858, " " 83½°
" 1859, " " 75½°
" 1860, " " 65°

July.—The first fortnight mostly dry and fine, yet not that bright sunny weather we often have at this season. The latter part of the month dull, wet, and cold.

August.—The whole month dull, wet, and cold. Potatoes hopelessly diseased; Hops looking very bad, and the corn not ripe at the end of the month.

September.—A slight shock of earthquake was felt here and in other parts of Kent on the 3rd, the weather being then and up to the 14th tolerably fine. The latter part of the month exceedingly wet, delaying all kinds of work, and spoiling much corn and other things.

October.—Some Wheat still uncut on 1st; but the first eight days being dry, most of the outstanding corn was got in. The middle part of the month very wet; but one of the most remarkable features of the year was some hot days at the end of the month—the 28th, 29th, and 30th being oppressively warm, the nights being warmer than most of those in June and July. A frost on the 12th had injured many of the flower-garden plants, but they subsequently recovered and looked well towards the end of this and succeeding month.

November.—This month only remarkable for its more than ordinary number of fogs, with frequent but not heavy rains keeping the ground always wet and dirty. There were but few

frosts and these very slight, the weather being often mild and warm.

December.—This month, up to 17th, remarkably mild; so much so, that up to that date some variegated Geranium-beds here looked as well as they had ever done during the season, and many other things equally well; but severe weather setting in, these continued up to the end of the month. The greatest cold, however, was not so low as has been recorded in many places in England, the thermometer indicating 15° on the morning of Christmas-day, which was the lowest point; there being a very slight covering of snow on the ground at the time, which was augmented on the 27th by a snowdrift, but not deep. A thaw on 30th and 31st, accompanied by rain, closed the month with the highest flood in the year, excepting that succeeding the 24th and 25th of April.

Wet as the season has been, a still greater rainfall for twelve consecutive months might be shown than that of 1860, by taking the year beginning 1st October, 1859, and ending 30th Sept., 1860, when the rainfall would be 38·67 inches instead of 33·66 as under. And it is somewhat remarkable that, notwithstanding the cold, there have been fiercer winds from the N.E. than on previous years, and these less dry than before, while the S. and S.W. winds have been unusually cold. Subjoined I give in a tabular form the direction of the winds each day at noon, with the rainfall of each month, and number of rainy and frosty days.

| 1860. | Direction of the wind at noon. No. of days. | | | | | | | | Not ascertained. | Rain in inches. | No. of days rain fell. | No. of frosty days. |
|---------------------------|--|------|-----|------|-----|------|-----|------|------------------|-----------------|------------------------|---------------------|
| | E. | S.E. | S. | S.W. | W. | N.W. | N. | N.E. | | | | |
| January | ... | 4 | 1 | 18 | 1 | 4 | 3 | ... | ... | 2·87 | 18 | 13 |
| February | 1 | 2 | 2 | 7 | 2 | 7 | 5 | 1 | ... | 1·40 | 16 | 21 |
| March | ... | 1 | 5 | 8 | 2 | 12 | 1 | 2 | ... | 2·61 | 20 | 17 |
| April | 2 | 1 | 2 | 2 | 3 | 4 | 4 | 12 | ... | 2·84 | 10 | 15 |
| May | 1 | 3 | 8 | 6 | 1 | 4 | 1 | 7 | ... | 3·12 | 15 | 1 |
| June | ... | 1 | 9 | 15 | ... | 2 | ... | 3 | ... | 5·09 | 23 | ... |
| July | 1 | ... | 8 | 2 | 2 | 3 | 13 | 2 | ... | 2·07 | 13 | ... |
| August | ... | 1 | 13 | 10 | 5 | 2 | ... | ... | ... | 3·54 | 26 | ... |
| September | 2 | 3 | 4 | 5 | 2 | 4 | 3 | 7 | ... | 3·36 | 20 | ... |
| October | ... | 2 | 8 | 7 | 7 | 2 | 4 | 1 | ... | 1·71 | 17 | 2 |
| November | 5 | 3 | ... | 5 | 1 | 1 | 1 | 14 | ... | 2·67 | 21 | 9 |
| December | 1 | 6 | 4 | 3 | 3 | 2 | 7 | 5 | ... | 2·38 | 17 | 15 |
| Total for 1860 | 13 | 27 | 64 | 88 | 29 | 47 | 42 | 54 | ... | 33·66 | 216 | 93 |
| Corresponding for 1859... | 8 | 53 | 21 | 125 | 11 | 59 | 9 | 78 | 1 | 29·55 | 151 | 93 |
| for 1858... | 16 | 71 | 16 | 73 | 24 | 58 | 19 | 87 | 1 | 16·33 | 116 | 93 |
| for 1857... | 14 | 47 | 37 | 81 | 37 | 38 | 21 | 86 | 4 | 24·33 | 137 | ... |
| for 1856... | 14 | 44 | 34 | 99 | 29 | 42 | 28 | 72 | 4 | 27·79 | 169 | 89 |
| for 1855... | 21 | 32 | 23 | 63 | 36 | 48 | 25 | 115 | 2 | 20·84 | 160 | 114 |
| for 1854... | 32 | 17 | 29 | 100 | 62 | 41 | 36 | 47 | 1 | | ... | 122 |

The hottest day in 1860, was July 2nd, and August 1st, thermometer 78°. The coldest night that preceded the 25th of December, thermometer 15°. The highest range of barometer, February 15th. 30·16. The lowest range of barometer, January 24th. 28·32.

The barometer, though very seldom keeping steady, has never run so high nor yet so low as in 1859, but its oscillations have often been at variance with the preconceived notions of its weather-predictory powers. The winds have been equally perplexing; so that, summing all together, the so-called body of astro-meteorologists will have something to do to reconcile the many contrarieties which the past season has exhibited, and there are few that can wish them to be repeated. But enough from one district has been said about the defunct year. Let us see what an obituary is sent from other quarters; and whether a complaint or the contrary be the theme, let full justice be done to the memory of the departed year 1860.—J. ROBSON.

FORCING.

(Continued from page 162.)

MUCH of what has been said in reference to furnaces and flues will be applicable to all other modes of heating by the burning of fuel. The chief advantage of some of these modes, such as steam or water, is that the heat can be carried to greater distances, and presented at a more uniform temperature, and is thus better fitted for very large houses, or for a number of houses to be heated from one furnace; but for small single houses these advantages and others, as to safety and cleanliness, are procured at a greater expense for fuel than would be required

for heating by a good common flue, as however carefully the other apparatus may be fixed, a good portion of the heat will pass up the chimney, however carefully the damper and the draught at the ash-pit door may be regulated. Where economy in fuel, therefore, is a great consideration, and a hot-water boiler is used for a small house, a flue from the furnace should pass at least a certain length through the house. Where a large boiler has to heat several houses the loss of heat thus sustained by passing up the chimney would be no great matter when divided between the different houses.

HEATING BY STEAM.

This mode of heating is only fitted for large establishments where a person can always be in attendance, as little or no available steam is secured, unless the water in the boiler is kept at boiling-point. I lately knew of a couple of houses near each other thus heated, but hot water was substituted, and found to be a great economy in fuel, labour, and attendance. The great advantage of heating by hot water is, that whenever the water becomes hotter than the place to be heated, heat will at once be given off, it matters not whether the water be 100° or 200°.

Perkins' system of heating by hot water had some of the advantages and few of the disadvantages of steam. A coil of strong pipes one inch in diameter was fastened in the fireplace, the upper pipe from the coil forming the flow-pipe, and that connected with the bottom the return-pipe. The whole heating was accomplished with an endless-pipe, as in the whole there was no opening. At the farther end from the boiler or furnace there was an expensive pipe double or treble the size of the one-inch pipe used for heating, and at the bottom of that expensive pipe there was an opening for seeing how the pipes were supplied with water, and adding a little when necessary; but except at that time, that opening was rendered air and watertight.

Whatever heat was applied was thus given off by the pipes, and when much heat was given owing to the pressure, the water might reach to double the heat of boiling water. There could hardly, however, be said to be economy in the small pipes thus highly heated, as they required to be very strong and carefully made, and besides the air brought into contact with pipes at from 250° to 300° and 400°, was too much dried, and rendered unhealthy by the scorching of organised matter that the air might contain. Most gardeners would rather increase the number of their pipes than have the water in them higher than from 180° to 200°.

The Syphon system by Kewly was also a very ingenious and scientific mode of heating, but as we once found to our cost, the smallest aperture in the pipes, even though the size of the point of a pin, and which though scarcely to be found, yet admitted air to the pipes was fatal to the whole system. Any one who tries to empty a cistern or a barrel with a syphon not quite airtight will find the reason.

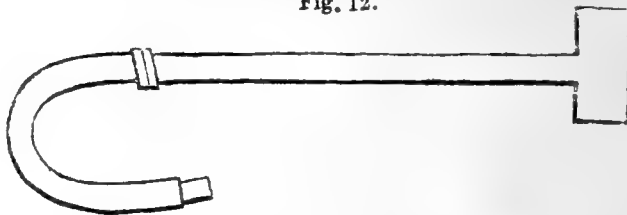
All experience and observation, therefore, coincide in the statement, that the simpler the mode of heating the more satisfactory will it generally be. All intricacy in boiler and pipes only adds to the labour and expense, nothing is simpler than the whole theory and circulation of heated water. Apply heat to water above 40° and it becomes lighter and expands. Place a kettle on the fire brimful of water, and long before the water actually boils it will run over the sides of the kettle, because it cannot find room inside. If before that water got so hot we had plunged our hand into it, we should have found that the farther we went down the colder it was, and the nearer the surface the hotter it was, especially if the vessel were covered by a lid. Every washerwoman knows all about this who uses a washhouse copper. Instead of waiting for a whole boiler to be heated sufficiently she will take as much as she wants pretty hot, by dipping two or three inches deep from the surface, which will be hot, whilst that deeper down is comparatively cool. These simple facts explain the whole theory of circulation. Give vent for the heated water to flow, and bring back the cool to supply its place. The flow-pipe must, therefore, be at the top of the boiler, or nearly so, and the return-pipe as near the bottom as possible. The first hot-water heating I saw was done with a washhouse boiler supplied with a wooden lid, a hole near the top for the flow-pipe, and one near the bottom for the return, both pipes going to a cistern on the same level as the boiler. In all such boilers, exposed to air, the circulation is more languid than when the boiler is closer and sunk a little below the level of the pipes.

At page 120, *fig. 5* is shown how a boiler may be fixed over a

flue so as to supply heated vapour. If such a boiler had a second pipe near the bottom, and the top and bottom ones were joined at the farther end either by a semicircular band *C* with an air pipe in it, or both terminated in small open cisterns, there would be a circulation of heated water as long as heat was applied.

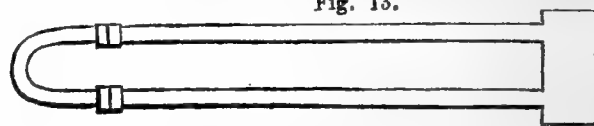
As I write chiefly for amateurs I may mention that such modes have been used for hot vapour, and also for additional heat by hot water to propagating-pits inside of a house heated by a flue. One of the most simple things in this way I have seen tried was a bend, and a nine-foot length of a four-inch pipe,

Fig. 12.



the bend being placed over, or, rather, in the fireplace, the end of the bend just coming outside of the brickwork, and there secured with a wooden plug and red lead, and the other end of the pipe terminating in a small cistern. A couple of inches of rough gravel were put over the pipe. A bed was formed 2 feet wide, and bottom heat was thus obtained for propagating. By such an arrangement the hottest water went along the upper part of the pipe, and the colder by the lower part; but the circulation was not so complete as in another similar case where two three-inch pipes were used—one entering near the top of the small cistern, and the other returning from near the bottom. So well has this answered merely by putting the semicircular

Fig. 13.



joint in the fire that heats a flue that the enthusiast who manages it, sometimes desiring a little heat in his bed when he wants little in the flue, has had a damper made, that, when the smoke is mostly gone, he can put in nearly home at the mouth of his flue, and keep the most of the heat about the bend of pipes which he calls a rare cheap boiler; and he also contemplates moving his little cistern 9 feet further on, so that by putting on another two nine-feet of piping he can make his bed 18 feet, instead of 9 feet, long. A coil over, or partly in, the fireplace would answer better still; but that would have to be made, and, therefore, entail expense. As mere auxiliaries under such circumstances such simple modes will be useful.

Where much, however, is to be done with hot water a boiler must be set apart to do it, and of a size in proportion to the work to be done. I have already stated that an open boiler, like a washhouse copper, will do for a single house; but that the power will be so far diminished. In heating different houses on different levels from one boiler, or even a single large house, the boiler should, if possible, be sunk two, three, or more feet below the general level of the pipes. It is just as natural for heated water to rise as for cold water to fall; and in either case an incline will be an assistant in the matter. The rise even of an inch in 40 feet is better than a dead level.

In speaking, as above, of the size of the boiler, the word *size* must be used in a particular sense when applied to boilers for hothouses. A boiler may be very large, and yet very unsuitable, and possessed of little power. The smaller the fireplace, provided it be sufficient, the greater the economy of fuel, because of the more perfect the combustion—the larger the surface of the boiler presented directly to the action of such fire, and the smaller the quantity of water in the boiler to be heated safely in proportion to such surface exposed to heat, the greater and quicker will be the action of the boiler.

For instance: For heating merely a good bulk of water with little fuel in a small fireplace, hardly any mode will beat the washhouse copper, nicely set, with the fire playing directly on the lower part of it, and the heated air and flame playing round the most of it. For a strong continuous heat in a hothouse there might be worse plans now; but in cases where brisk and sudden action are required, few plans could be worse. You must heat considerably that great mass of water before you could have hot water in your pipes. But now, just take another

boiler some $2\frac{1}{2}$ inches shallower and $2\frac{1}{2}$ inches narrower, and place that inside of the other, so as to displace all the water except about 2 inches at the bottom and 2 inches round the side, and then with such a lessened quantity of water, exposed to the same amount of heating power, would not the water be sooner set a-gallop more quickly along your flow-pipes?

This simple idea or experiment lies at the foundation of all our improvements in hothouse boilers. Thus knock out the bottom of these two boilers, and then fill up the two-inch space that separates them at top and bottom, and you have the regular cylinder boiler, such as is advertised by Mr. Jones in these pages. In these however set, the fire is intended to be in, and heat the inside, there being some inches of water all round. In

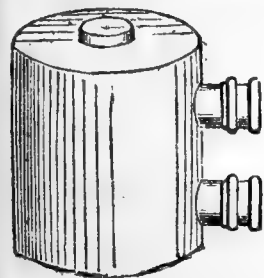


Fig. 14.

fig. 14 we should like the pipes to be nearer the top and bottom. This would be especially necessary as respects the return-pipe if the boiler is to be raised considerably above the bars of the grate. If it rests on them or nearly so it will not signify so much. For general purposes economy is gained when in such boilers the fire is placed inside, and thus acts only on the internal surface; but power would be gained if the heat of the fire acted at once on the inside and the outside of the boiler.

If we turn such a couple of wash-house boilers topsy-turvy, with the wide mouth downwards and a smaller opening cut through the top, then we have the conical boilers of many makers, all on the same principle as the small one given by Mr. Allen at page 134. The chief particular features of that little boiler are its being made in pieces easy for transmission, its peculiar damper, and the peculiar mode of hanging or swinging the grating. Such a boiler would be very useful for a small pit: for a moderate-sized house it would need to be fully double the size. The fire is generally placed inside these the same as in the cylinder boilers, and to them similar remarks apply. Though fed from the top, when the boilers are of any size and enough fuel is used a furnace-door will be required to stir up the fire and take out clinkers; and in such cases the boiler must stand six or eight inches above the grating on firelumps, but they will be none the worse on that account.

Keep your double wash-house boiler topsy-turvy, but instead of making a hole in the top make one at each side, the one opposite the other, and you have the germ of the saddle-back, fig. 16. This is one of the most simple and the most useful of boilers when well set. The space of from two to three inches is generally left for water between the inside and outside covering. If large, a return-pipe is generally fastened on each side, joining into one farthest from the furnace-door; or, if not, a pipe close to the end and bottom goes across from side to side, generally protected by a

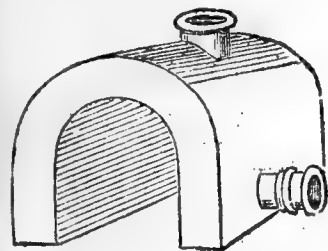


Fig. 16.

brick inside. The end there is generally blocked by a Welsh lump, leaving some six or more inches for the smoke and heated air, which comes back on each side outside and crosses over the top into the chimney. There are many modifications of the saddle-back, almost every maker having some peculiarity. Mr. Grey manufactures a very effective one, corrugated inside so as to present a large surface to the fire. Messrs. Barwell, of Northampton, make what they call waggon boilers, with flat tops outside, the inside being rounded as in the common saddle-back. Of all these we like the simplest best.

Of late years we have had many new boilers, each of which has had its admirers. Mr. Thompson, of Dalkieth, introduced retort boilers. Conceive of a cannon some two feet long, with a bore through it of nine inches, and the water contained in a small space between that and the outside, with flanges for flow and return, and you have before you the amateur's retort for small places. Increase these in length, cast two together, or three in the shape of a triangle, and you have a double or triple retort for doing a great amount of work. They are generally placed lengthwise over the fire, and so regulated that the flames pass through or return



Fig. 17.

through the retorts before they enter the chimney. Means are taken to keep them easily clean. Place them upright, and you have single, double, or triple cylinder boilers.

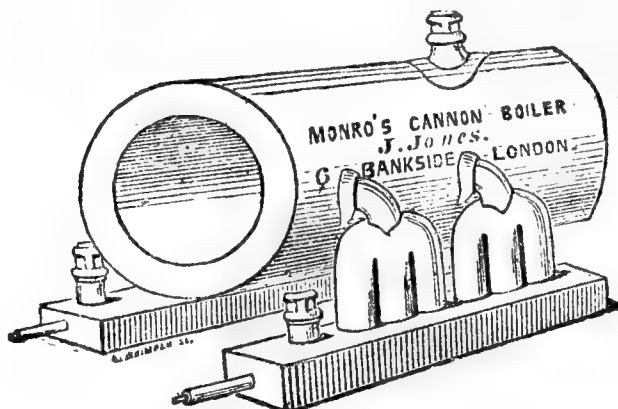


Fig. 18.

Monro's cannon boiler is on the same principle but more complicated, and forms the sides of the fireplace for itself.

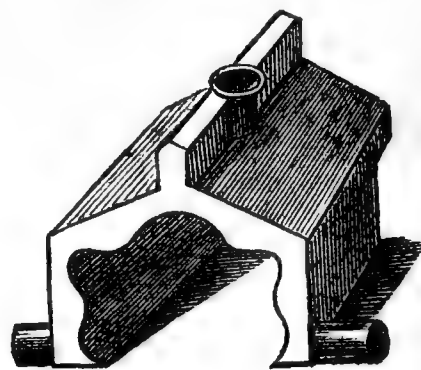
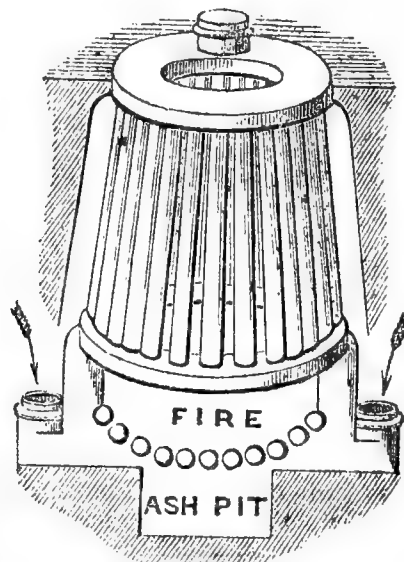


Fig. 19.

Mr. Lobjoit's boiler we have heard spoken well of, but have never seen it at work. A large surface is said to be exposed to the fire.

In a late volume of THE COTTAGE GARDENER I gave a description of the heating by an upright tubular conical boiler at Mr. Weeks', Chelsea. At that time such an amount of work from one boiler was unprecedented. Mr. Weeks and his father before him had used oblong squares of tubes with the fire inside. The Mr. Weeks of the present was the first to use upright tubes on the principle of the conical boiler. These tubes at that time were in a double row, so that by counting the number of tubes, taking their length and circumference, it would at once be apparent, that no other mode could present such a surface to the direct action of the fire, placed in the fireplace at the bottom.

Fig. 20.



IMPROVED BOILER OF MR. WEEKS.

There can be no difficulty in setting such boilers. If the brick-work at a few inches from the pipes could be partly made non-conducting outwards, by a space of enclosed air, the bricks

bounding the furnace would themselves get so hot inside as to be continually radiating heat to the pipes instead of cooling them. Keeping this in view, I have some doubts if the mass of pipes forming the grating and surroundings are such an advantage, as to counteract the extra expense they occasion, as more heat will be obtained from the fuel, in proportion as it is placed directly on materials of slow conducting properties.

Fig. 21.

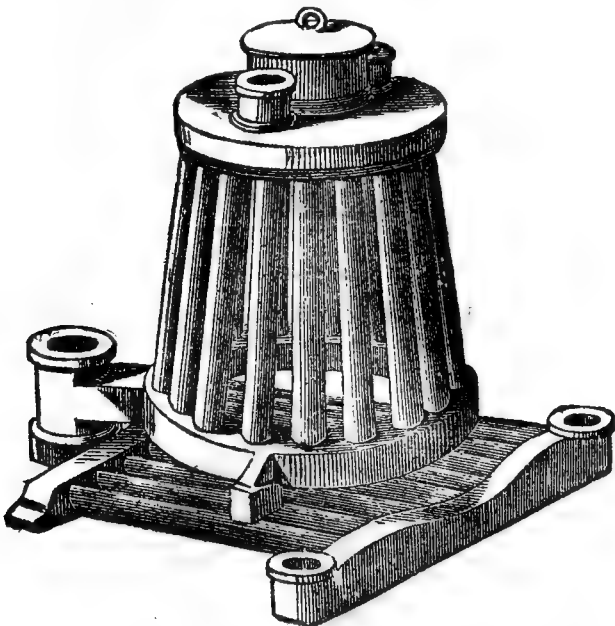


Fig. 21 is one of Ormson's tubular boilers; and fig. 22 one of Skinner's boilers, both of these boilers being identical in principle with Weeks'. The only difference being, that each tube of Weeks' is fitted separately, and Ormson's is all cast in one piece. Both plans have their advantages and disadvantages. The first may be more easily injured, but as easily repaired. The second is less likely to have a faulty piece, but when faulty can scarcely be mended. Amongst all these boilers which I have either worked or seen at work, I would not despise any of them when well set and managed and kept clean, the latter being of importance, particularly in the simple but useful saddle-backs.

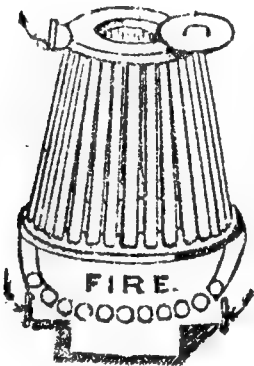


Fig. 22.
MR. SKINNER'S BOILER.

A dispute has obtained as to whether in such cases as saddle-backs, wrought iron or cast iron is best. I have no preferences. Cast iron generally lasts longest when thoroughly seasoned; but they are apt to crack almost at first from no assignable cause, even when well proved. If there should be a little the matter with a wrought-iron boiler it is easily remedied.

I have wrought the commonest boilers that must have been in use more than thirty years. I have known some crack a few days after being in use, and some quite worn out in less than ten years. The large one-boiler system for large establishments is by far the most economical, both for labour and fuel; but I could scarcely sleep sound at night with one boiler for a town of hot-houses. A second boiler should be set ready to act in case of accident. The extra expense would be a small per centage on security. Most large establishments are securing this desirable object.

All that has yet been done to test the efficiency of different boilers, is to my mind unsatisfactory. What little I have attempted myself would lead me to the conclusion that theory did not quite agree with practice. The only conclusion I have arrived at is, that the simplest boiler is the best, and when well set and well managed will act well. All our improvements have proceeded on the principle of exposing a large surface to a small amount of water. Of course, under these circumstances, when the fire is out, the water will suddenly cool. The same rule applies to pipes. When we want a quick, sudden heat, two, two and a half, and three-inch pipes will be best. When we want a regular, continuous heat, pipes four inches in diameter will be more suitable.

The following table from the *Cottage Gardeners' Dictionary*,

taken, I presume, from Hood's excellent work on heating, will give an idea of the extent of surface of boiler exposed to the fire to heat a certain number of feet of pipe.

| Surface of Boiler exposed to fire. | 4-in. pipe. | 3-in. pipe. | 2-in. pipe. |
|------------------------------------|-------------|-------------|-------------|
| 3½ Square feet will heat..... | 200 | 300 | 400 |
| 5½ " " "..... | 300 | 400 | 600 |
| 7 " " "..... | 400 | 533 | 800 |
| 8½ " " "..... | 500 | 666 | 1000 |
| 12 " " "..... | 700 | 933 | 1400 |
| 17 " " "..... | 1000 | 1333 | 2000 |

For higher temperatures we would rather increase the surface, and especially for small houses, as the fire burns less thoroughly in a very small furnace than a larger one. Mr. Hood also gives tables and formulas, showing the number of feet of piping necessary to heat one and a half cubic feet of air for each square foot of glass, according to the heat required, and the external temperature, but for practical purposes it will be sufficient to state, that for all lean-to houses, dividing the cubic feet of air inside by 30, will give the number of four-inch pipe sufficient to heat the house to 60°, unless in extraordinary weather. Dividing the cubic feet of air by 20, will show the length of piping to keep up a heat of 70° to 75°, and when from 75° and upwards, the cubic feet of air must be divided by 18. Span-roofed houses must have more piping in proportion. The large Conservatory at Chatsworth has been kept to 60° in very severe weather, with one foot of four-inch piping to every thirty cubic feet of air, although it is glass all round. But for a span-house not a third or a fourth of the height, more piping would be required in proportion, as the great body of enclosed air in such a large house prevents the house, as a whole, from being suddenly cooled. The smaller the house, the more quickly is it acted upon, either by heat or cold.

The size of the furnace will be regulated by the size of the boiler, but where continuous heat is wanted, and the cylinder and conical form are not adopted, the furnace should have more space at the end and at the back, as well as sides, besides that occupied by the fire-bars. Unlike a common flue, the fore heat should be kept about the boiler by lessening the outlet as mentioned by blocking with a firelump the outlet below a saddle boiler. In all other forms the outlet from the fireplace should be small, and a good damper placed in the chimney as near the boiler as convenient. The economy in working will depend on the regulation of the damper and the ash-pit door. As previously remarked, a small jet of air introduced over the fire, or better still, in front of it, will answer the combustion of most of the smoke, &c.

In trying to estimate the power of boilers, regard must be had to the fuel used. Cinders and breese from coke-ovens have more clinkers and less heat than good coal. Good coke with a little small coal is, perhaps, the best for all kinds of boilers. Coke varies in price according to its heating power. We are not able to give the heating powers of different coals, but some are specified in the *Cottage Gardeners' Dictionary*. Thus if the heating power of Scotch Cannel coal be

| | |
|--------------------------------------|-----|
| Lancashire, Wigan, will be | 199 |
| Yorkshire Cannel | 196 |
| Newcastle, Wallsend | 188 |
| Gloucestershire, Forest of Dean..... | 169 |
| Welsh, common, very low indeed. | 108 |

It is also calculated that about 3 1-10th lb. of the best coal will be necessary to raise eight gallons of water from 50° to boiling-point. The same weight of good dry wood will be necessary to effect the same object, and if the wood is wet, it will require half as much more weight and more time. Hence, 1½ lb. of dry charcoal will be as effective in heating. In this neighbourhood we can get good Silkstones at from 22s. to 23s. per ton, and Derby Cobbles at 14s., but when carefully used the first are not only best but cheapest. With common stoking there is not apt to be so much waste with the latter. R. FISH.

THE VARIEGATED ARABIS.

I AM glad to see that public attention is directed to this useful variegated plant, and having grown it some years I can confirm all that has been said in its favour, excepting its perfect hardihood, and that I by no means deny; but having occasion in former years to remove the plants from the quarters they

occupied during the summer, I wintered them in cold pits with shrubby *Calceolarias* and similar plants, but the present winter I have all the large plants out, and have no doubt but they will prove perfectly hardy.

To such of the readers of *THE COTTAGE GARDENER* as may not be acquainted with it, I may say that it is merely a variegated form of one of the oldest alpine or perennial plants we have. I am not certain of its specific name, but assuredly "lucida" is improper. I see it advertised as *Arabis caucasica variegata*, a name expressive enough, though some botanical catalogues do not mention the species "caucasica," although several are from that elevated region. In common phrase it used to be *Arabis alpinus*, or *A. albida*, or sometimes *A. præcox*. One of the earliest flowering herbaceous plants we have, with a loose umbel or spike of white flowers a foot high rising out of a spreading but compact-growing plant, with leaves inversely wedge-shaped, and their edges bluntly serrated. The foliage being a pale green, or, as botanists say, glaucous, gave the plant a pale appearance at all times, and the variegated form it has taken having, in a measure, dwarfed its growth, and made it still more compact, it now forms as close and dense a tuft of agreeably-shaped stems and foliage as does the garden Pink itself. The edging or marking of the leaf being of a pale yellow of about the same tint as that which gives colouring to the Flower of the Day Geranium, or, perhaps, a little more yellow; but it is for its compact growth that it is most to be recommended.

An unbroken band of about three or four inches high may easily be had to surround any kind of bedding plants. I had several rows of it the past season, which have been amongst the most useful things in the garden. Two rows which formed the front edging of two ribbon-borders facing each other I have left in the ground, and they look remarkably well. Other plants I have taken up from their summer quarters and planted in beds in conspicuous places, where I have been accustomed to plant bulbs, *Alyssum saxatile*, *Cheiranthus Marshallii*, *Iberis gibraltica*, &c., and as the plants lift as well as *Calceolarias*, or a patch of turf, I have no doubt but they will look well all the season. At present, the middle of December, they certainly look well, and they have been planted about six weeks. I fully expect it to be perfectly hardy. Some plants standing out with us the last two winters were not in the least hurt, but they were in a sheltered position, where *Verbenas*, *Calceolarias*, &c., also live through the season.

Not the least recommendation of this useful plant is the easy way in which it is propagated: side shoots or slips taken off in October, and put into a cold frame in the usual sandy soil that cuttings are struck in. Some hundreds that were so put in here have almost every one struck root, and have never had a covering of any kind yet, but in a general way I have treated them as I do *Calceolaria* cuttings, putting them in at the same time into a cold pit, over which some wooden shutters or old spare lights are placed in severe weather, and in early spring the *Arabis* flowers there; and I generally allow the flowering shoots to be fully developed and most of the florets fairly out before I cut them off, for to cut them earlier only induces the plant to send up more shoots, and consequently exhaust itself; whereas, by allowing them to attain a certain stage of growth, they may then be removed, and no more flowers are seen all the summer, and the plants grow into compact tufts from five to eight inches in diameter, and in autumn may be taken up to ornament the beds now denuded of their summer flowering plants, at the same time affording a good supply of cuttings for another season; or plants may be grown in some spare place for winter work, as I do in great numbers in the kitchen garden, and none promise to be more useful than this *Arabis albida variegata*, or whatever name it be decided to give it. The only English name to the original that I am acquainted with was, perhaps, a local, but certainly not a vulgar one, "Marry me Quick," and of its appropriateness to such a title, I leave younger people than myself to determine.—J. ROBSON.

EXCLUDING COLD—SOWING CLIANTHUS DAMPIERI.

I HAVE just read Mr. Fish's battle with the frost with interest, as I had just such an affair on a small scale in the October frost of 1859, and by covering a small greenhouse with mats and old carpet saved even *Tropæolum elegans*. A week after that gas made all safe. Having now moved to a district where the night

supply is very weak, I have now got a hot-water apparatus (saddle boiler), which, as I go to bed at half-past ten o'clock, requires my attention to stir the fire about five, and sometimes to relight it. I should not mind this, but I am afraid my wife will soon lose her love for gardening if it entails striking a lucifer at such an hour. I make up my fire at night, according to Mr. Fish's instructions in your last volume. When I make it with cinders it is slowly burning at eight o'clock next morning; but there is not heat enough in the pipes for the late weather; indeed, the thermometer registered 32° on Christmas morning. I have tried both coal and coke—the two mixed do best. As my carpet and such like coverings are not supposed to be picturesque, I have adopted thin tiffany lights, tacked inside each side light, and I fancy the enclosed air must keep back much cold, and appearances are not much disarranged. I have also tacked tiffany two feet down the ridge over one light, so that when the sun shines suddenly we can give air through it without much chill. I wish some plan could be devised to let me sleep till eight. Would placing loose bricks round the pipes under the stages store much heat? I never kept my plants well till I read Mr. Fish's article on "Atmospheric Moisture." I have damped the shelves nearly every day since fires became necessary, and in spite of the fall in temperature, have the Crystal Palace Scarlet Geranium blooming in sixties, *Genista canariensis*, *Mignonette*, *Pompones*, and a beautiful *Cyclamen coum*. Is it not early for the latter? It was not housed till the frost arrived.

I have just received seeds from abroad of *Clianthus Dampieri*. Is it worth growing? When my thermometer showed 32° *Tropæolum elegans* died close to the glass. *Tropæolum Triomphe de Gand*, up an arch, six feet only away, did not show the least distress; indeed, it looks luxuriant, but has not opened a bloom this last month.

I wonder, among furnishing shrubs for cold places, the Ivy called *Algeriensis* is not more grown. If neatly kept a better looking pot shrub cannot be.—H. B.

[We should certainly scatter ideas of picturesqueness to the winds when the safety of our plants was concerned. We do not quite apprehend your mode of using the tiffany inside. Does it not shade too much in winter? It will have less effect in keeping out cold than if it were placed outside of the glass just as when placed inside in summer, it would keep out the light so far, but would not cool the house so well as when placed outside. We highly approve of your mode of giving air, after being sifted through the tiffany. It will act just as beneficially as placing a thin woollen cravat over your mouth when you go to the fire for your heating apparatus in these cold nights. We are also glad you have so much in bloom in this dreary weather, and on the whole everything going on so satisfactorily. We can assure you that such statements as yours make duties and efforts very light and pleasant.]

Your *Tropæolum Triomphe de Gand* will bloom when the sun gets stronger. The *Clianthus Dampieri* is a perfect gem. Steep the seeds in warm water for twenty-four hours—that is to say, get the water from 100° to 120°, and keep them at the fire-side in that heat, and then sow in a hotbed. If no hotbed, delay until April.

Now for the chief affair. We do not know what to say, as we neither know the size of the house, the size of the boiler, nor the feet of pipe; but we should like to be able to do something to prevent the result of Mrs. B. losing her love of gardening from your jumping out and into bed at all hours in a morning. It is not likely we shall have many nights like that of Christmas-eve, and now and then we are sure Mrs. B. would not mind, or you would not write in such good spirits—in fact, we have a strong suspicion that, like the first man, you are trying to throw the blame on Eve, and shifting your own dislike of getting out of a warm bed on a cold morning upon the shoulders of your partner, who is thinking of nothing but your comfort. We have not any great faith in placing bricks round the pipes, though they would do something. But as the furnace, when well banked up, was nicely alight at eight in the morning, we can only advise one of two things—either increase the pipes in the house, or in severe weather, by firing briskly in the afternoon and evening, have the pipes hotter by bedtime, and, of course, the house hotter by a few degrees than would be otherwise necessary, and then by banking up the fire, and regulating the damper and draught so as to secure slow combustion, there would be no danger of the house being too low in the morning. We have been rather surprised how little fire heat has kept out frost. In all suspected cases of extra cold nights it is wise and good policy to have the houses comfortable before bedtime. For

instance : If we wished a house to average 40° we would have it up to 46°, and then we should be satisfied if it fell to 37° or 38° on a cold morning, and the fire burning slowly during the night. Again : If we wished an average of 45° at night in a contemplated severe night we should not mind a few degrees more before bedtime, and then it might fall to 40° in the morning. In giving this extra heat walls, &c., absorb it, and give it out again. We hope these hints may be of benefit ; if we can do more we shall be glad. See "Doings of the Past Week."]

NEW AND RARE PLANTS.

SARCANTHUS PARISHII (Mr. Parish's Sarcanthus).

Nat. Ord., Orchideæ. Gynandria Monandria. Sent to Messrs. Low, Clapton Nursery, by the Rev. C. S. P. Parish, from Moulmein. Flowers golden yellow. Blooms in August.—(*Botanical Magazine*, t. 5217.)

CYRTANTHUS SANGUINEUS Red-flowered Cyrtanthus).

Nat. Ord., Amaryllidaceæ. Hexandria Monogynia. Called also *Gastronema sanguineum*. Imported from Caffraria by Messrs. Backhouse, nurserymen, York. It flowers in the greenhouse in August.—(*Ibid.*, t. 5218.)

SONCHUS GUMMIFER (Gum-bearing Sowthistle).

Nat. Ord., Compositæ. Syngenesia æqualis. One of the shrubby species peculiar to the Canary Isles. Flowered in Mr. Saunders' greenhouse at Reigate, in July. Flowers yellow.—(*Ibid.*, t. 5219.)

GUZMANNIA TRICOLOR (Three-coloured Guzmannia).

Nat. Ord., Bromeliaceæ. Hexandria Monogynia. Very handsome, bracts below green striped with black ; upper bracts bright red ; flowers white. Native of St. Domingo and Jamaica.—(*Ibid.*, t. 5220.)

CHAMÆROPS FORTUNEI (Mr. Fortune's Chamærops).

Nat. Ord., Palmæ. Polygamia Dioecia. Well known as "Mr. Fortune's Chusan Palm." Most hardy of all the Palms. Has remained nearly unprotected near London for ten winters. How has it endured the present one ?—(*Ibid.*, t. 5221.)

SOLANUM RUNCINATUM (Runcinate-leaved Solanum).

Nat. Ord., Solanaceæ. Pentandria Monogynia. Native of Chili. An ornamental greenhouse plant. Flowers purple.—(*Ibid.*, t. 5222.)

THE SCIENCE OF GARDENING.

(Continued from page 173.)

THE functions of animals and plants are in a like degree analogous. Animals take in their food by the agency of the mouth, and prepare it for digestion, either by various degrees of mastication, or by attrition, as in the gizzards of birds. In this they differ from plants ; but these have a sufficient compensation, inasmuch as that they imbibe their food in a fluid form, liquid, or æriform, and, consequently, in a state already of the finest possible division. Animal and vegetable remains are their common food, and salts of various kinds are their condiments and stimulants ; plants having this advantage over animals, that as they absorb only the soluble and finer parts of their nutriment, and their absorbing organs have the power of rejecting that which is offensive, they have no offensive matters to separate such as appear in the excrements of animals.

In the animal stomach the food undergoes an extensive change, being reduced to a pulp of greater specific gravity, and being altered entirely both in taste and odour. In the sap-vessels of plants, which may be truly considered as their primary organ of digestion, their food or sap undergoes a change precisely similar ; its colour and flavour are altered, and its specific gravity increased.

From its stomach the animal's food passes into the intestines, is there subjected to the action of the bile, and the chyle or nutritive portion is separated from that which is excrementitious. In its passage through the intestines, the chyle is absorbed by the lacteal vessels, and conveyed into the blood ; and these mingled liquids are propelled by the heart into the lungs, to be there exposed to the action of the air. The vital liquid now changes its purple hue to a florid red, loses a portion of its carbon and watery particles, the former combining with the

oxygen of the atmospheric air in the lungs, and being breathed forth in the form of carbonic acid gas. As plants take in as food no gross, unneeded ingredients, it is obvious that no process like the biliary operation is required in their course of digestion. But in them the food or sap, proceeding at once along the branches, is poured into the leaves, which are the very lungs of the vegetable world. Here, as is the blood, its colour is changed, and oxygen emitted from it during the light hours of the twenty-four ; but carbonic acid is breathed forth during the night, and, at all periods, a considerable amount of watery vapour is emitted.

From the lungs, by the agency of the heart, the blood is propelled through the arteries over the whole animal frame, supplying nourishment and warmth to all the parts, and where, by those being abstracted, it is again converted into purple or venous blood, and is returned by the veins to undergo a repetition of those changes already noted as being effected in the lungs. In plants the sap, after exposure to the action of the air in their leaves, is returned by another set of vessels, situated in the bark, ministering to the growth and support of the whole plant. It is true, that only under certain circumstances, detailed in another chapter, is heat evolved during the processes of vegetation ; but the circulation of the sap in plants, beyond all doubt, enables them to resist the intense colds and heats of their native climates. In frosts, the most intense and prolonged, we find the interior of trees remain unfrozen ; and, under the meridian sun of the tropics, the sap of the Palm and of all other trees retains coolness. This power to resist extremely elevated and depressed temperatures is characteristic of all animated nature.

Such is the close similarity in the digestive and circulatory processes characterising the members of the two great kingdoms of organised nature, a resemblance which obtains in all the other functions enjoyed by them in common. During respiration, the air inhaled by animals through the mouth and nostrils proceeds immediately to the lungs, and acts upon the blood ; in plants, the air inhaled by their leaves operates instantaneously upon the sap. Oxygen is the vital air of animals, so that gas and carbonic acid gas are equally essential to plants. If animals be placed in a situation where they inhale pure oxygen, their functions are highly excited and increased in rapidity ; but it is an exhilaration speedily terminating in exhaustion and death, if the inhalation be continued for a protracted time. So plants will flourish with increased vigour in an atmosphere containing one-twelfth of carbonic acid, but even this brings on premature decay ; and if it exceeds that proportion, destruction is still more rapidly induced. During sleep, animals exhale less carbonic acid than during their waking hours, so plants emit a much diminished amount of oxygen during the night.

We might now proceed to enumerate the facts demonstrative that plants are gifted with sensation, if these had not already been stated when considering how salts affect plants. In addition to those facts we will only observe, that plants are obviously stimulated by light. Everybody must have observed, that they bend towards the point whence its brightest influence proceeds. M. Bonnet, the French botanist, demonstrated this by some very satisfactory experiments, in which plants, growing in a dark cellar, all extended themselves towards the same small orifice admitting a few illuminating rays.

Almost every flower has a particular degree of light requisite for its full expansion. The blossoms of the Pea and other papilionaceous plants, spread out their wings in fine weather, to admit the solar rays, and again close them at the approach of night. Plants requiring powerful stimulants do not expand their flowers until noon, whilst some would be destroyed if compelled to open in the meridian sun—of such is the night-blooming *Cereus*, the flowers of which speedily droop, even if exposed to the blaze of light attendant on Indian festivities.

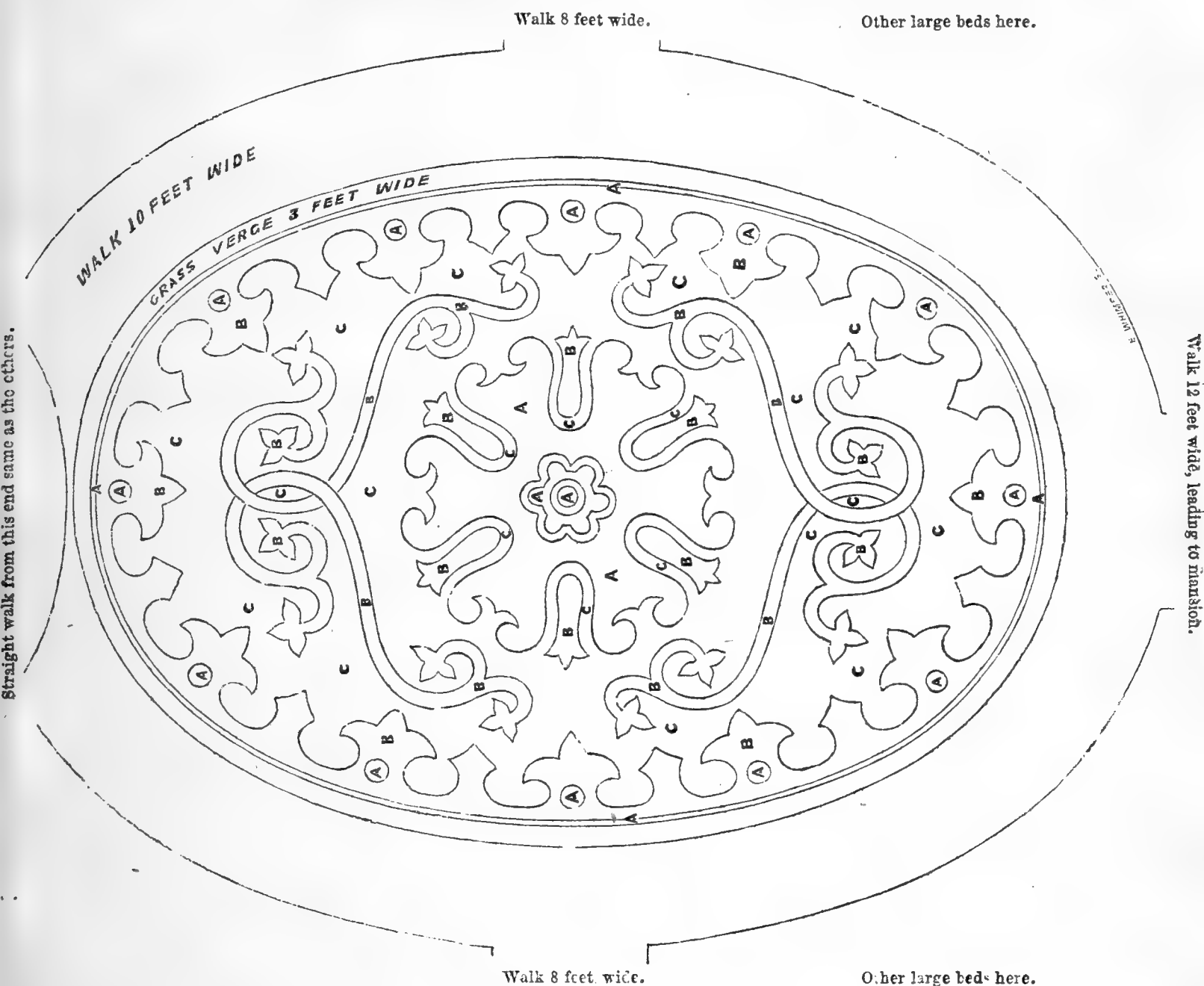
From these and other facts incidentally mentioned in preceding chapters, and others which will be stated when considering the health of plants, without believing that they demonstrate sensation to exist in plants as acute as that possessed by the superior or more perfect classes of animals, yet they certainly are satisfactory evidence that some plants possess it to a degree nearly as high as that with which the zoophytes, or even the polypus and leech, are gifted. Some of these animals may be cut into pieces, and each section will become a perfect individual ; of others, their heads being taken off, may be grafted upon other bodies ; and a third class of them may be turned with their insides outwards, without any apparent inconvenience. If plants

be endowed with no more or even less sensation than must be that of such animals as these, it explains the causes, and throws light upon the prevention of many diseases affecting those which we cultivate, and warns the cultivator from the late performance of many of his operations, as well as from being needlessly violent in his treatment. If a Grape Vine be pruned too late in the spring, the bleeding or effusion of sap has been known to be so excessive, that the tree has died from absolute exhaustion.

Stone-fruit trees, if severely bruised, are frequently destroyed by the inroads of a disease, resembling, in all its characteristics, the cancerous affections of animals; and we have known a whole crop of Wheat affected with a swelling of the stem or culm, evidently caused by an extravasation of the sap from its ruptured vessels, owing to a heavy roller being passed over the crop, when of a forward growth.—J.

(To be continued.)

SUMMER FLOWER GARDENING AND WINTER DECORATION AT LINTON PARK.



It frequently happens that when an individual imagines to himself that he has made a great and useful discovery, an inquiry into the matter dispels the pleasing allusion and proves the unpleasant fact, that the so-expected invention exists in a more perfected form at some place where its utility is most required; but, on the other hand, we often witness the workings of envy decrying the merits of new improvements, and by some of those subtle lines of argument which every invention, word, or action, is liable to be assailed with, endeavour to prove that a similar improvement was known years ago. Nay, some will carry their intricate quibbles relating to its originality until they admit themselves lost in the mysteries of Grecian or Egyptian antiquity. Fortunately, the general public do not recognise this ungenerous carping when any thing really good is presented to them, and whether the article be an improved needle or an Armstrong gun, the good article receives its fair share of commendation as a compensation for the disparagement it receives on the other hand, and public authority stamps its utility if it deserves it. Now, in this onward march of improvement which mechanical objects

of all kind exhibit, it is certainly our duty to keep pace with the long-headed hard-thinking class, who after a long period of fruitless trials and vexations, at last succeed in perfecting a piece of machinery so as to enable two men to perform the work that three were required for before. Only it too frequently happens that whenever an advance is made in gardening matters, labour is increased rather than diminished; but if the addition be in the shape of improved culture, or some fresh subject added to the list of useful or ornamental articles, it is generally received with a welcome corresponding with its beauty or utility, or both combined. Now, a comparison with certain things in our line with the same thirty years ago, certainly favours the idea that little or no improvement has been made; but other branches of the craft have assuredly advanced beyond all expectation, and still keep advancing. One of the most conspicuous in this class, is flower gardening as it is now practised. The stride that this has taken of late years is certainly surprising, quite as much for the extensive scale on which it is now carried out, as for novelties enlisted into its service. New plants are eagerly bought up and

old ones sought after with an avidity which enthusiasm only can throw into such matters, and the success or failure of each new aspirant to floral honours duly recorded. This praiseworthy emulation of each cultivator trying to excel his neighbour, is highly honourable to all concerned, and improved ways of propagating, growing, and preserving plants suitable for the parterre have received so much attention from other quarters, that I need not refer to that here, but will at once strike into a subject which, if not entirely new, has certainly never yet received the attention it deserves from those who have the best chance to carry it into effect, and if it has been carried out elsewhere with that approbation which I fully expect it would receive from all who have seen it, the parties who have been so practising may fairly be accused of hiding their light under a bushel; but now as I mean to explain the way in which the object is accomplished here (Linton Park), I trust others (if there be any such), will also describe the modes they adopt for the same end. The subject being one that has received little or no attention from the pens of floricultural writers, yet it is, nevertheless, of more importance than many objects much time and attention have been bestowed upon, is "winter decoration of flower gardens."

The readers of *THE COTTAGE GARDENER* may, perhaps, remember, that at pages 144 and 160, in Vol. XXIII., Mr. Fish in describing several features of this place, alluded to the winter decoration, but as winter had not set in when he was at Linton, and, consequently, he did not see the effect produced, I will endeavour, with the aid of the accompanying figure, to describe what has been done in that way, first of all explaining some particulars of the situation which may not be known to such readers as have not the volume in question to refer to.

The position of the mansion at Linton is well chosen to have both an extensive prospect of the distant country, as also a commanding view of near objects. Situated about midway up a ridge of hill running east and west, it is well sheltered on the north by the still higher ground and suitable plantations, while it is sufficiently elevated on the southern side to command the grounds and adjacent country in front of it. Immediately in front of the mansion (which presents a frontage of about 150 feet), is a terrace 30 feet wide, supported by a retaining wall surmounted by an ornamental balustrading. This wall is 7 feet high, and is covered with creepers of various kinds. A succession of broad landings and slopes extend to the area below, which for distinction we may call the basement, on which the flower garden now treated of is placed. A broad flight of steps with corresponding landings leading down the centre of these slopes, facing the centre of the mansion, and communicates with the terrace by two flights of side steps. The sides of the slopes where not cut into other artistic figures, being planted with Laurel cut to a proper form with Cypresses and other trees, forming prominent objects at proper places. This, however, need not be explained further than to say, that the successional slopes and landings extend to a distance of about 100 feet, with a perpendicular descent of 28 feet. The basement being a level or nearly so, is converted into the flower garden, an oval 90 feet by 68 feet, forming the central compartment, and having its longest diameter pointing to the mansion resembles a circle to the eye. The angle of elevation about 25° , giving it that appearance from the terrace. This will be easily understood by those having any knowledge of perspective and may observe that it was to answer that purpose that an oval, instead of a circle was formed as a central figure. This will explain the reason which otherwise might not appear excusable to those who see the outline only on paper.

Now, I need not tell the bedding-out gardeners that a bed of the size mentioned above swallows up a multitude of plants. True it is a three-feet grass verge surrounds it, still we have a bed 84 feet by 62 feet in one complete mass. The planting of this has always been done by preparing a geometric plan not too intricate in its parts, and yet forming an agreeable whole, and rarely more than three or four colours are used, and plants of as near a uniform growth as possible are used, so that when once planted their present as well as after growth may always present a flat, level surface, with the outline of the several divisions clearly shown; and all this ought to be done with very little after-labour in the way of trimming, for a bed of the dimensions given affords no chance to do much to it without getting into it, and the less this is done the better. Generally speaking, we manage to have it so as to require no further trimming after the plants are once fairly met. Tom Thumb and Mangles' Variegated Geranium, with Purple King and a Plum-coloured Verbena, a

rather dwarf, shrubby yellow Calceolaria and Variegated Alyssum, are the principal plants we use. The last-named plant being the most useful of any, it being compact and uniform in its growth, and the most continuous white-looking plant we have. We use it extensively in this bed, intersecting Tom Thumbs and other things so as to produce a sort of embroidery, which, as this plant keeps pace with the Geranium, continues to the last and even after the wetness of the autumn has washed off all that remained of the Geranium flowers, the curved lines of this Alyssum formed a good contrast with the deep-green leaves of Tom Thumb. I, therefore, have no hesitation in placing this plant first in the list for giving a useful and lasting character to this kind of flower gardening, and as it forms a sort of hedge or boundary, such spreading plants as Verbena may be cut in when crowding too much upon it; but we seldom plant any Verbena but those of an upright rather than a spreading character, excepting occasionally planting Verbena pulchella near the edging; but this has not always been done, as it does not always last through the season.

It need hardly be remarked, that by planting as described above a different pattern is adopted every year, and this is more easily done and its appearance more effective than by altering the colours of a number of little beds all of the same shape each year; but to those who have never seen the effect of a large bed like the one described (and that is not the only one we have and treat this way), but would like to try their hand in planting one in that way, I would earnestly entreat them not to attempt to introduce too much intricacy into their design, a few bold, well-defined lines, or figures of a simple shape, have the most pleasing effect when viewed at a distance of—say 100 feet (the centre of our bed being about 200 feet from the terrace), as at that distance fine, well-meant scrollwork and other embellishments which look well on paper would only confuse what would otherwise be agreeable. It is, therefore, prudent not to try too many figures at first, neither too many colours. Nothing looks better than a mass of Tom Thumbs of not less than forty or fifty over with lines of Alyssum, cutting it up like embroidery or braid into a number of simple yet agreeable shaped forms, and not too many of these, but as tastes vary much, some may, perhaps, like more diversity.

Now, as the planting of large masses like the above may, perhaps, frighten those who have not the plants to do it with, and some also may object to the raw appearance which such a large space of naked earth must have in the winter, I may say that we get over this difficulty in a manner still more novel and certainly more original than the way in which the planting is done. I have for many years thought our general system of winter decoration of flower-beds very defective. A few bulbs, or it might be annuals or early-blooming herbaceous plants, were generally planted after the tender things had been destroyed and the beds dug in the autumn; and the result was that there was scarcely anything whatever to rest the eye upon, from November until the end of March, but the raw earth of the bed. True it is that now and then a few dwarf shrubs were stuck in to attract attention, but they seldom presented that healthy inviting aspect which was at all pleasing. And as the majority of families of rank spend more of their winter months in the country than any other, the grounds ought to present as ornamental an appearance as possible during that time; and as flowers are out of the question for the beds, something else must be substituted. It was, therefore, with a view to supply this want that I have for some winters adopted the plan of managing that portion of our terrace garden of which a figure is given below, which is a copy of the design used the present season, but, it is needless to say, will be altered next. Neither do I assert that it is the best that can be made, but it is here offered as an example of the kind of decoration adopted.

It being already explained that the bed is surrounded by a three-feet-wide grass verge, it is only proper to say that when the bedding plants were taken up at the end of October the ground was trenched, so as in some degree to compensate it for the loss of the winter's fallow; the surface was then trodden firmly over when it was dry, and it was rolled or beaten with a shovel, and made as smooth as well could be. The design now given was then marked upon it with a pointed stick; and broken stones, of the size that road-surveyors and others would accept as likely to pass through a two-inch ring, were set in an even and uniform way along each mark. Pebbles would have been better, but we have not got any, and a little care in picking over a heap of broken road-stones, so as to get them as nearly

a size as possible, will do very well. The stones being all placed in position, and any unevenness caused by the treading made smooth again, the whole space is covered over with a colouring matter. Local circumstances will generally determine this, but here we have red, white, and black only—and I do not know that any addition is wanted to these colours. For red we have brickdust, which is easily obtained by procuring a barrowload or two of the softest or waste half-burnt red bricks from a brick kiln—these crush pretty easily with a wooden rammer. Coal ashes, when not mixed with sand or other light-coloured matter, make an excellent black: and we have the white shells used for walls to indicate that colour. I am not certain but chalk or lime would not do as well; but I am certain it would not do better, as these things become dirty-looking when wet, which they more often are than dry in the dull winter months: while coal ashes look best when damp, and consequently form the best colour, and, being the most plentiful, we usually have our ground colour of that material. These three substances laid on about an inch thick will generally suffice for the winter; and the outlines, being clearly defined by the edgings of stones above described, and which are by this means about half covered, give the whole a carpet-like character. For be it remembered that almost any reasonable amount of figuring may be given to the winter decoration, while, as before stated, the summer planting must be limited that way. Nevertheless, it is always advisable to have one or two bold lines, like arteries or braces, on which the eye when surveying the minor points may fall back upon—as, for instance, the limbs of the scrollwork in the annexed design, which it is proper to observe are about a foot broad, and none of the parts are less than that size. The colours generally remain bright and clear until March, when they are taken off and the bed dug and prepared for its summer crop. If required it might remain longer, but I always wish the bed to have at least six inches tillage before planting, and this ought never to be denied. I may also add that we have sometimes done the side beds to this central one in the same way, as they also are large ones, being 24 feet wide by 100 feet long; and some other adjoining ones are also large. But generally the central one decorated in the manner described is sufficient, and it is much admired; and the features being available in other places as well as here, I shall be glad to hear of its being adopted and the opinion formed of it.

Description of the Plan.—All the portions marked A are red (brickdust), being the outer rim next grass verge, twelve small circles inside the fleur-de-lis edging, and the centre piece, except where cut into by the two central rings B B. All the figures marked B are white (shell), being the outer edging of fleur-de-lis, the scroll and foliage-work and the six figures cutting into the centre. The two inner rings, one a scollop one, are also of this colour. The remainder C is all black (coal ashes), in which the scroll-work is inserted. A band of black also surrounds the six white figures in central compartment—in fact, black forms the groundwork to the whole.—J. ROBSON.

THE FLORAL MAGAZINE.*

THIS excellent and useful magazine has now reached its ninth number, and has been sustained throughout so as to justify the great praise and high expectations we formed on seeing the first issue. The part before us contains a fine picture of—First, the new Double Zinnias exhibited before the Royal Horticultural Society's Floral Committee; Second, a magnificent blue Larkspur of the Bee species, raised by Messrs. Fraser, of Lee Bridge Road. Third, a beautiful variety of *Nemophila atomaria* called *oculata*; and, Fourth, a group of the lovely *Gladioluses* raised by Mr. Standish, of Bagshot. If our readers want a real first-rate illustrated book of flowers they should subscribe to the "Floral Magazine."

EFFECTS OF 1860 IN THE GARDEN.

THE year 1860 has been brought to a close, and as it has been a year somewhat extraordinary, and particularly so to the gardener, be he in ever so limited a station, so the termination, too, has been none the less extraordinary, and the injurious effects of it will be none the less for the mildness of the autumn generally, and of the early part of December.

* *The Floral Magazine*, comprising Figures and Descriptions of Popular Garden Flowers. By Thomas Moore, F.L.S., F.R.H.S. London: Lovell Reeve.

In the first ten days of December the average highest temperature was above 40° with rain, and brought forward a piece of late Walcheren Broccoli which ought to have been in a month earlier; but still they were exceedingly useful, and I managed by protecting them to hold them on till Christmas-day, when I cut a good dish, but it was the last, for there was a universal cutter abroad on that day. The thermometer stood at 7° in the morning, with a cutting wind, and it did not rise above 15° at any time during the day. I fear the greater part of the Savoys and Broccoli are clean gone. Our soil being rather stiff, and work deep last spring, and the season being wet, may have a good deal to do with it.

But, to begin at the beginning of the season, and take a review of the bygone year fairly and justly as it has appeared to us, cannot be altogether uninteresting or unprofitable. The time allotted to each of us has two uses—preparation to be made for the future, and wisdom to be learnt from the past, and fortunate indeed must he be that has not collected material sufficient from the past year for many a lesson for the future. Adversity is a stern teacher, and we are apt to learn more from our failures than our successes. Individually, the former occupies the largest space in my "chapter of events."

It would be too tedious to enumerate all the failures, besides there are local causes for some of them, and yet the same causes may contribute to some of my successes—viz., as I before stated, the kitchen garden being used only for Potatoes and other summer crops, and let only for the crop for several years past, and, as a matter of course, was in a most piteous condition, and, worst of all, Bindweed deep down in the subsoil, and before attempting to crop it it was necessary to dig up from four to six inches of soil that had not been disturbed for years to get out as much as possible of the Bindweed, and the season being wet during the greater part of the process, and the summer afterwards, I think sufficiently for many of my failures, or to a greater extent than otherwise would have been. Of Peas I never saw anything equal to ours, and they continued bearing till the frost cut them off, and then with an abundance of bloom (British Queens). Radishes, Lettuces, Spinach, and Broad Beans were excellent. Onions, Carrots, and Parsnips very good. Everything else was below middling. All the crops mentioned had a good dressing of burnt ashes.

In the flower garden all newly-made and the flower-beds the top spit, after taking the turf off of old pasture high and dry and full of wireworm, how much of my loss may be charged to their account I know not, and amongst them yellow *Calceolarias*. In lightening up the bed of the above I destroyed scores each time, and the plants still kept dwindling away. Thinking the soil was too poor for the yellow *Calceolaria* I gave the bed liquid manure about twice a-week, and I soon saw an improvement, so I filled up the bed with plants from the mixed borders, and had a good bloom till the last, and although I have since dug up the bed I did not meet with half a dozen wireworms since I put the liquid manure on. I should like to be satisfied on two points. First, Do the wireworm injure *Calceolarias*, and does liquid manure disagree with the wireworm?

Unfortunately last winter not having any place to winter any stock in, I entrusted a neighbour with several boxes of cuttings, with a lot of seedling Geraniums not bloomed, with a good batch of a seedling Geranium that Mr. Beaton had spoken favourably of, and not a single one was saved. I had one plant of the above I kept in my bedroom and has produced me another batch, which I hope to be more fortunate with this winter, so that from the above misfortune we had to go to market for everything, and on the heels of expensive alterations. Our beds were furnished very sparingly with not over strong plants, and the season being cold most of the beds had a very ragged appearance till after the summer was gone by. I had two large beds of seedling Petunias, white and purple, and a long row of Sweet Peas that never showed a blossom, but the growth was beyond all bounds. The variegated *Alyssum* and *Lobelia speciosa* as edgings done well, also the Mint, though with the defects mentioned by Mr. Beaton, but I have tried the experiment with it. My best display has been from plants in pots. I have been able to keep up a few select beds in that way, and by keeping a change for one bed in reserve, several beds can be changed a dozen times or more, if thought desirable, in the same season. Young beginners will find this a very good plan in showing them in a short time how to arrange the different colours, to say nothing about the charm of being able to change the character and colour of several beds in a morning before the bedroom blinds are up.

There is one point worth noticing in connection with the past year—few plants have perfected seed. Although I have had a good many *Geraniums* in small pots, not one has perfected a seed.

In compliance with the desire of some of your readers, I enclose a brief meteorological sketch of the past year at this place (Frome).—THE DOCTOR'S BOY.

| 1860. | Highest day temperature. | Lowest night temperature. | Average day temperature. | Average night temperature. | No. of days rain or snow. | Depth of rain. | No. of frosty nights. |
|----------------|--------------------------|---------------------------|--------------------------|----------------------------|---------------------------|----------------|-----------------------|
| January..... | 35 | 28 | 45 | 36 | 21 | 2.78 | 8 |
| February..... | 50 | 22 | 37½ | 30 | 9 | 1.45 | 17 |
| March..... | 56 | 21 | 45½ | 34 | 19 | 2.75 | 8 |
| April..... | 62 | 29 | 49 | 35 | 13 | 1.90 | 8 |
| May..... | 71 | 37 | 62 | 47 | 15 | 3.12 | ... |
| June..... | 69 | 44 | 62½ | 49 | 24 | 7.06 | ... |
| July..... | 73 | 44 | 65 | 52 | 13 | 2.61 | ... |
| August..... | 67 | 46 | 63 | 52 | 25 | 6.45 | ... |
| September..... | 64 | 32 | 56½ | 43 | 11 | 2.63 | 1 |
| October..... | 60 | 27 | 57½ | 42 | 14 | 3.10 | 1 |
| November..... | 48 | 28 | 40 | 35 | 12 | 3.00 | 11 |
| December..... | 51 | 5 | 35½ | 29½ | 13 | 2.05 | 16 |
| Total..... | ... | ... | ... | ... | 189 | 38.90 | 70 |

CHARACTER OF LOAMS AND EFFECT OF SOILS ON POTATOES.

THE term loam has, it appears, puzzled many a one, especially of the class usually styled amateurs. But, let me go further and affirm that it has thus served some of the best Professors of the science and art of gardening. I must confess that there are matters connected with loams which still puzzle me as to their bearing on gardening affairs. We all know that some agricultural districts through the country look red when ploughed, others a common dirty brown or hazel, and others again yellow. These red soils are charged by some old farmers with being the best Wheat soils in the country; this is too sweeping. But that certain soils, or classes of soils, will produce certain crops in higher perfection than any other class, need not be doubted. The Fluke Potato is now known by every one, and is grown for the market extensively on what are called "red soils." I have this season seen or heard of several cases of advertising in which this has been inserted, "warranted from red soils." This, therefore, appears to be a recognised condition amongst mal-practical men.

Now, this Fluke somewhat puzzled me for a while, for I began with the best of seed out of Lancashire, but I have found them degenerate so that they are rejected; and this is the case with all the farmers around here, as far as the soil is light and sandy. But it is with them not merely a question of colour in the soil, but rather of texture. The Fluke we must class as a Kidney, and all the Kidneys with which I have been acquainted are partial to soils somewhat adhesive. I have been astonished years since at the singularly robust character of the Ash-leaved Kidney grown on strong Wheat soils. Nantwich is only some ten miles from here (Oulton Park), and I was in the habit of looking over the rich land and gardens in that neighbourhood a score years since. The land in that neighbourhood is peculiarly strong, deep, and fat, not merely a coarse clay soil, but what, perhaps, may be termed an alluvium. Finding my Ash-leaved Kidneys degenerating fast, I obtained prime seed from a respectable farmer then noted for them. But, behold, in three years on our light soils they ran off as bad as ever.

Now, the Kidneys in my friend's garden used to astonish me, they grew as stiff as Oak trees, in fact quite a different plant. At the same time the round Potatoes grew on our land with the utmost freedom. I know a gardener, and a very experienced man too, who about four years since obtained permission, with much difficulty, to procure turfy loam for a new Vine-border from any part of the park. This was considered a boon indeed. The park is a fine soil, generally varying a little in point of adhesiveness. Well, he hit on a plot at last that seemed all perfection, and used it for the new Vine-border, and, strange to say, he could not get the Vines to take to it, yet he used nothing with it but the ordinary material.

Now, had this man been a raw recruit, I should have fancied

that ignorance or quackery were the cause, but it is not so. Now, if there—

[This fragment of a communication intended for our pages, was the last literary effort of our late valued correspondent, ROBERT ERRINGTON. Nature gave way before he could complete this record of part of his long and varied experience. All our readers must have benefited by his labours, and we know that many will rejoice to have it in their power to make a return of benefit by aiding HIS WIDOW. Mrs. Errington is left with a large family and but slender means of support; she will be a candidate for the next pension from the Gardener's Benevolent Society, and we venture to ask our readers for their votes and interest. The following is the address she has forwarded to us:—

"FRANCES ERRINGTON, widow of Robert Errington, well known as a writer in many gardening periodicals, solicits the votes of the friends of her late husband, to enable her to obtain a pension from the Gardeners' Benevolent, to which her husband subscribed thirteen years."]

ADDITIONS TO THE IRISH FLORA.

IF we are not mistaken, it is now *fifty-six years* since Dr. Mackay first published a list of the Phænogamous plants and Ferns of Ireland found by him and others up to that time. In 1806 he gave to the Royal Dublin Society, for publication, a list of some of our rarer and more useful plants, discovered by himself during two extensive tours in the Southern and Western Counties. In 1824 he gave to the Royal Irish Academy, for publication, a catalogue of all the Phænogamous plants and Ferns which he had then ascertained to be indigenous to Ireland. This Catalogue was the result of the excursions and observations made by him during the long period that intervened between its publication and his earlier lists. All of these were merely ancillary to his more important work, the "*Flora Hibernica*," to the publication of which, he tells us in the preface, he had long looked forward as "the final result of his investigations." This invaluable work appeared in 1836, comprising not only the flowering plants and Ferns of Ireland but also the Characeæ, Mosses, Liverworts, Lichens, and Algæ. It was, of course, at once adopted, and has ever since been the "Hand Book" of the Irish Botanist. Although another quarter of a century with its "weight of years" has nearly passed, we are happy to see the "Nestor of Irish Botany" still able to find solace and enjoyment in his favourite science. The subjoined list of additions to the "*Irish Flora*" was lately drawn up by him and read by Edward Percival Wright, Esq., A.M., F.L.S., &c., at a meeting of the Zoological and Botanical Society of Trinity College, and published in the last number of their "Proceedings," from which we extract it. We are aware Dr. Mackay has several other very interesting additions to add to our *Flora*, which we believe he intends soon to give to the public through the same medium:—

1. *Alyssum minimum* (D.C.).—First found by Mr. F. Darley and myself on a dry, sandy ditch-bank, near the farmhouse, Portmarnock, in 1817; but as it could not be found for several years before the publication of "*Flora Hibernica*," I did not insert it. I, however, found it again, in considerable quantity, in a sandy field, near the same place, in 1837.
2. *Hutchinsia petraea*.—Found on old walls at Bandon, and on old walls near the site of the old Botanic Garden, Cork.
3. *Cochlearia greenlandica*.—Island of Rathlin, Antrim: Mr. D. Moore.
4. *Sinapis muralis* (Br.), *Diploaxis muralis* (D.C.).—On the strand by the Glanmire road, two miles below Cork: Mr. William Alexander. On sandy ditches at Portmarnock, 1837, by Mr. J. Johnstone.
5. *Dianthus deltoides*.—In a dry, hilly field, opposite Dunscombe's Wood, Cork, in 1837, by Mr. William Alexander, who sent me specimens.
6. *Euphorbia peplis*.—I have fine specimens sent me by the Countess of Carrick, collected at Garry's Cove, near Tramore, County of Waterford, by Miss Trench, 1839.
7. *Silene conica*.—Sandy field at Portmarnock, 1837: J. T. M.
8. *Silene noctiflora*.—Found in a field near Tullamore, King's County, in 1838, by Miss Green, of Dublin, who gave me specimens.
9. *Sedum album*.—Roofs of old thatched houses in the town of Antrim, and on walls near it, along with *Sedum reflexum*, in 1837: Mr. D. Moore. On a dry hill near Glanmire, in 1830, by Dr. Harvey.

10. *Acinos vulgaris*.—Found near Athy, by Miss Trench, in 1838; and in July, 1840, in a sandy field at Portmarnock, by several of my botanical friends and myself.

11. *Asparagus officinalis*.—Abundant on the shore near the town of Wexford: Messrs. M'Calla and Walker, who sent me plants and specimens. Tramore, Waterford: Dr. E. Percival Wright.

12. *Myosotis repens*.—Specimens were sent to me by Mr. C. Babington, from the County of Mayo, since the publication of "Flora Hibernica," and I have since found it in Glancree; Mr. D. Moore also sent me specimens from Antrim in 1837.

13. *Medicago maculata*.—On the strand of the Little Island, Cork, by Mr. Denis Murray.

14. *Lathyrus palustris*.—Mr. D. Moore sent me specimens from the banks of the Lagan, near Lough Neagh, near to which place Mr. Templeton first found it. Mr. Rollins also sent me plants and specimens from ditch-banks by the sea-side, beyond Dunganstown, County of Wicklow, in 1849. I have since got fine specimens from Dr. Melville, collected by him at the same place.

15. *Polygonum viviparum*.—Professor Murphy sent me plants and specimens in 1824, found by him on Benbulbin; but I neglected to insert it in "Flora Hibernica."

16. *Ophrys muscifera*.—Specimens were sent to me by the Rev. Mr. Despard, curate of Castlecomer, in 1837, found by him in that neighbourhood. I have since (1845) received specimens from Miss Haughton, from the Co. Kildare.

17. *Epipactis grandiflora*.—First found by Mr. George Whitla at Dunneen, near Antrim. I have since received specimens from the same locality.

18. *Calamagrostis lapponica*.—Banks of Lough Neagh and other places in the County of Antrim, in 1836: Mr. D. Moore.

19. *Carex elongata*.—On the banks of Lough Neagh, near Gally's Gate, in 1837: Mr. D. Moore.

20. *Senecio squalidus*.—On the roofs of old houses in Cork and suburbs, and also on the walls of St. Finbar's Church and other places near Cork: Mr. William Alexander.

21. *Sisyrinchium anceps*.—Gathered in a coarse meadow, half a mile north of the village of Woodford, near Loughrea, in great quantity, and on the race-course near that village, and also in a coarse meadow, near the police barracks at Rossmore, near the Shannon, by James Lynam, Esq., who sent me specimens in September, 1847. I have also received specimens from the same place, sent me by Mrs. Mathews in August, 1855.

22. *Helianthemum canum* (*Cistus marifolius*, Eng. Bot.).—I have fine specimens of this plant, collected in Arran by Dr. Melville in 1855. When I visited the island in 1805, principally with a view of collecting specimens of *Adiantum capillus Veneris*, I found plants of *Helianthemum vulgare*, but not in flower. As I believe the other grows on a part of the island I did not visit, and it not being its flowering season, I did not find it.

23. *Erica ciliaris*.—Found by Mr. J. Bergin, at Craig-a-more, between Clifden and Roundstone, on the 14th September, 1846, from whom I have received specimens.

24. *Aspidium rigidum*.—Found at Townley Hall, near Drogheda, several years ago. I have specimens sent me by Miss Williams.

25. *Asplenium lanceolatum*.—Found by Mr. Woods, near Cork. I have specimens of a plant brought to the Botanic Garden, I believe, by Dr. Kinahan, from the same place.

26. *Simethis bicolor*.—Found near Darrynan Abbey, County of Kerry, about ten years ago, by the Rev. Thaddeus O'Mahony, who gave me specimens, which I have mislaid. The plant which was brought by him may be seen in the College Botanic Garden, with some specimens obtained by Dr. E. Percival Wright, through the kindness of Captain O'Connell, in 1858.

27. *Saxifraga nivalis*.—Found on Benbulbin, County of Sligo, by John Wynne, Esq., of Hazel Woods, ten or twelve years ago.—(*Dublin Agric. Review*.)

merits of these numerous varieties, and wherein they differed one from the other. With these objects in view, I received instructions from the Committee to procure all the varieties of Peas that were to be obtained, and through numerous presentations and a few purchases, I succeeded in collecting no less than one hundred and sixteen varieties.

The whole of these varieties were sown on the 19th of February, and occupied two large quarters in the kitchen garden which had been prepared expressly for them. The ground received a liberal supply of manure, and the seed was sown under the most favourable circumstances. After the plants were above ground, the season assumed that ungenial aspect, which it continued to maintain throughout the whole of the summer, and the progress of the Pea crop was so slow that the first blooms did not appear till the 19th of May, and the first pods were not gathered till the 22nd of June. What with the long-continued cold, and the excessive rains, many of the varieties have grown quite out of character, and others have not been able to exhibit the real merits which they are known to possess.

The result of this experiment as regards nomenclature has been, to reduce the one hundred and sixteen varieties that were sown to seventy, which are certainly distinct, and to the merits or demerits of which this report will more particularly be directed. There cannot be a doubt but that seventy varieties of garden Peas are quite unnecessary. One-half of them are, in comparison with the others, perfectly worthless, and it would be well if the public would second the efforts of the seedsmen, and select for cultivation those varieties only that are most worth growing.

In arranging the collection for sowing, I first of all classed them according to the characters presented by the ripe seeds, and then by the heights to which they were said to grow. By this method considerable advantage was gained at the outset, by bringing the sorts most nearly allied close together, and thereby rendering comparison more easy. The arrangement I adopted was as follows, and to this I will adhere in the following report:—

CLASSIFICATION OF PEAS.

- I. Seed round or irregularly roundish, smooth, or nearly so.
 - A. Seed small, round, white; skin thin—*Frames*.
 - B. Seed large, irregular, white; skin thick—*Marrows*.
 - C. Seed mixed white and olive—*Green Marrows*.
 - D. Seed small, round, blue; skin thin—*Prussians*.
 - E. Seed large, blue, irregular; skin thick—*Imperials*.
- II. Seed compressed and wrinkled.
 - F. Seed white—*White Knights*.
 - G. Seed mixed white and olive—*Green Marrow Knights*.
 - H. Seed green—*Green Knights*.

I. FRAME PEAS.

Ripe seed white, almost round, small, smooth, and occasionally pitted. Foliage pale green, not blotched.

1. Dillistone's EarlyHURST & M'MULLEN.

The plant is of a slender habit of growth, produces a single stem two feet high, and bears on an average from seven to nine pods. The pods are generally single, but occasionally in pairs, almost straight, and containing seven Peas in each. The seed when ripe is white.

Sown on the 19th of February, the plants were a mass of bloom on May 19th. On the 5th of June the blooms dropped and the slats appeared, and on the 22nd of June the whole crop was ready to be gathered.

This is undoubtedly the earliest Pea known, and is quite seven to eight days earlier than Sangster's No. 1, which has hitherto been regarded as the earliest variety. A striking feature of Dillistone's Early is, that its changes take place all at once. It blooms in a mass; its pods all appear together, and the whole crop is ready to be gathered at the same time. On July 3, it was beginning to die off when Sangster's No. 1 was yet green and growing; but the pods are decidedly smaller than those of Sangster's No. 1.

2. Sangster's No. 1.....NOBLE COOPER & BOLTON.

- SYN. *Carter's Earliest*CARTER & CO.
Isherwood's RailwayHURST & M'MULLEN.
Sutton's ChampionSUTTON & SONS.
Early WashingtonCHARLWOOD & CUMMINS.
Daniel O'Rourke.....WAITE.

The habit of this variety is similar to that of the preceding, but it grows somewhat taller, being about 2½ feet high. Each

REPORT ON THE GARDEN PEAS,

GROWN AT CHISWICK DURING 1860.

By ROBERT HOGG, LL.D., F.R.H.S., Secretary to the Fruit Committee.

THE vast number of varieties of the garden Pea that are met with in seedsmen's catalogues, induced the Fruit Committee to make this one of the first subjects to which they would direct their attention; their desire being to ascertain what were the

plant bears from eight to ten pods, which are $2\frac{1}{2}$ inches long, and upwards of half an inch wide, quite straight, and containing seven and frequently eight Peas in each; they are generally produced singly, but occasionally in pairs.

Sown on 19th February, the plants began blooming May 22nd. On the 5th of June the slats appeared, and on June 29th the pods were ready for gathering. It will thus appear that in all its stages Sangster's No. 1 is less rapid than Dillistone's Early. It was slower in blooming; came into use seven days later, and remained considerably longer on the ground before its crop was fully matured.

It appears that Isherwood's Railway has of late years advanced in earliness and become a synonyme of Sangster's No. 1. Seven years ago it was the same as Early Emperor.

3. Early Kent.....NOBLE COOPER & BOLTON.

SYN. *Prince Albert; Early May.*

The Early Kent grown in the garden this season was quite a mistake, and proved to be the same as Early Emperor. The true Early Kent is now almost if not quite out of cultivation, and deservedly so, its place having been occupied by Sangster's No. 1, a more prolific and an equally early Pea. It is of a very slender habit of growth, and rarely more than 2 feet high, producing a scanty crop of small ill-filled pods. Its only recommendation, even in its best days, was its earliness.

4. Early Emperor.....NOBLE COOPER & BOLTON.

SYN. *Early Sebastopol.....CHARLWOOD & CUMMINS.*

Morning Star.

Rising Sun.

Plant of a slender habit of growth, always with a single stem, which is $2\frac{1}{2}$ to 3 feet high, and producing from eight to ten pods, which are from $2\frac{1}{2}$ to 3 inches long, generally single, but sometimes in pairs, and become perfectly straight as they approach ripeness. They contain about seven good-sized Peas, which when ripe are white.

Sown February 19th, the blooms appeared May 24th, and on the 5th of June they began to fall. On the 3rd of July the pods were fit to be gathered.

This is a taller grower, and a heavier cropper than either of the two preceding, but as an early variety it is not to be compared with either of them.

5. Danecroft Rival.

SYN. *Girling's Pea; Glass Pea.*

In habit of growth, height, and productiveness, this closely resembles Early Emperor, but it can be easily distinguished from that and every other variety by the total absence of glaucousness or bloom on the leaves, which gives it a singular and sickly appearance. The plant is remarkably tender, and on that account has long since been discontinued as a standard variety. It is now preserved only in the gardens of the curious, where it is grown more for its singular appearance than for any great merit it possesses.

6. Tom Thumb.....PAUL & SON.

SYN. *Beck's Gem.....BECK & CO.*

Royal Dwarf.....TURNER.

Nain Hâtif extra.....VILMORIN.

This is the most dwarf growing of all the varieties. It rarely ever exceeds a foot in height; the stem is of a stout habit of growth, and branches at every joint to within three or four of the top, producing from fourteen to eighteen pods. The pods are almost always borne in pairs, rarely singly, and are produced at every joint, particularly towards the top; they are smooth, of a dark green colour, and well filled, containing from five to eight Peas, which are almost as large as Imperials. The ripe seed is somewhat ovate, and of a greyish pearly colour.

The seed was sown on February 19th, and the plants bloomed on the 29th, ten days later than Dillistone's Early. The slats appeared on the 12th of June, and the crop was ready to gather July 3rd, being as early as Early Emperor, and eleven days later in coming into use than Dillistone's Early. This is a very excellent Pea for forcing, and for early sowing under walls or other shelter. It is remarkably prolific, and cannot but be of great use in small gardens where sticks cannot be conveniently obtained or made use of.

7. Telegraph.....BATT RUTLEY & SILVERLOCK.

This is in every respect, as regards habit of growth and general appearance, similar to the Early Emperor, and differs from it in the ripe seed having a black hilum like the Egg Pea. It also partakes of the character of the Egg Pea in flavour, having that

rough Bean-like taste which is remarkable in that variety. It produces on an average five to eight pods on a stem, and these contain from seven to eight Peas. Sown the same day, it ripens two days later than Early Emperor. The variety is not worth growing.

(To be continued.)

TRADE LISTS RECEIVED.

Catalogue of Vegetable and Flower Seeds by Dickson and Brown, 43 and 45, Corporation Street, Manchester, is a very capital and useful catalogue, because it gives a great deal of information about the articles which are contained in it.

Spring Catalogue and Amateur's Guide for 1861, by Sutton and Sons, Reading, is a quarto pamphlet of 55 pages, containing a great deal of useful information, and is illustrated by three lithographs of vegetable roots, and an engraving of *Gynarium argenteum*.

General Price Current of the Plymouth Seed, Agricultural Implement and Manure Company (Limited), is an octavo pamphlet of 88 pages, published by Simpkin & Marshall, price 6d., and is similar to the usual seed catalogues which furnish descriptions and notes on the cultivation of the varieties of seeds.

TO CORRESPONDENTS.

PROPAGATING CAMELLIAS (C. L.).—You may get seeds from seedsmen and sow at once in heat for raising stocks. The single and semidouble kinds make good stocks. Choose well-ripened shoots in August or September, and cut it into as many pieces as there are buds, leaving the leaves on each. Strip off a little piece of the bark on the side opposite the bud, and insert as thickly as they will stand in pots well drained, filled with sandy peat and loam to within an inch of the surface, which supply with silver sand. Place the pots in a close shady place, and keep in greenhouse heat all winter, and then plunge in a gentle hotbed in spring. In summer and autumn they will want repotting. Double ones may be done the same way, but they seldom do so well as when grafted on stocks raised as above.

CUCUMBER, MELON, AND PROPAGATING-HOUSE (R. D. L.).—For the house you propose, if it is to be twelve feet wide, we would raise the back wall twelve feet higher than the front if you can go that length. That will be first-rate for early work; for summer and autumn you may come to something like a pit. To make sure, you will want two four-inch pipes in your bed of from four to five or six feet, with rubble over the pipes, and you will need three such pipes for top heat. In your ground-plan you show no return-pipe. We think your place will answer. The propagating-bed will do well. If that was made, say, eight feet or nine feet, and you wished to propagate after Christmas, you would need three pipes. If to commence in the end of February two pipes will do.

VARIOUS (B. W.).—Gooseberries prune, so as to have a good portion of middle-sized young shoots, merely topping an inch or so off their points; these will produce the best fruit. Black Currants should be thinned out, so as to leave plenty of young shoots. Common Currants, White and Red, bear chiefly on spurs: therefore the young wood on the points of stems should be shortened back to four or five inches, young shoots left near their full length where a new stem is required, and all the other summer growth cut back to within a bud or two of its base. Raspberries, cut clean away all the shoots that bore last season, and thin out the smaller ones of last summer's growth if too thick. Your vinery must be small if the small boiler of Mr. Allen suit it and a pit. People get fonder than ever of novelty, if it be only so in name; for boilers exactly on the same principle have been in use many years. We should imagine, though we cannot be certain without seeing it, that repairing the flue would be your most economical mode of management. If the Vines are so bad and neglected, the best plan would be to cut them in severely, and give them next season to make fresh wood. We can give no other directions without more details. That and what you have done to the roots might thoroughly renew them; but you had better see a gardener, who might so thin and prune that you could have a crop next year, and renew the Vines too. We advise you to get our gardening manuals; they will explain everything, or nearly so, that you seem to require. We do not know Riddell's stove, but are surprised there should have been such a do as to its declared merits. Any good stove or boiler will keep the fire in a long time if you prevent a close combustion; but the fire will be slow, and mild, and gentle.

CAMELLIA BUDS FALLING (N. H. P.).—"Just like other folks" is with too many a very consolatory reflection, though, as you well remark, a very humiliating one so far as human progress is concerned. Some day we may feel glad that others have fared better than we have done, and that the evil is not lessened but increased when we have brethren in misfortune. Even on this account we are sorry to say that we have no reason for supposing that your disappointment with the Camellias is at all a general one. Extra dryness, or extra damp in the dull weather, and then the frost getting into the house, if the buds were well swelled, would be likely to unsettle them. We have had 2° below freezing, but our buds were never firmer, and the flowers have opened nicely.

VINES PLANTED OUTSIDE VINERY (W. H.).—As you have kept the border covered and frost excluded from it, and as you can give it a little heat at the time of commencing forcing, they ought to do well if your other treatment is correct. Have the stems swathed with haybands or strawbands before you commence forcing. If you keep the border covered you need not mind failing in applying artificial warmth up to the time of ripening.

BOOK ON SUBURBAN VILLAS (M. C. Dennis).—The work you refer to is Morris's "A House for the Suburbs Socially and Architecturally Sketched." There are no plans or elevations in it that would aid you in any way.

HEATING A TANK (G. W. H., Norfolk).—We do not recollect saying that you could not grow Cucumbers and Vines in the same place, but rather stated how it could be done. What we stated was, that early Cucumbers and Apricots could not be so managed. In heating your pit you would require just double the piping you propose—two for top heat; and if entering into the boiler for bottom heat all the cross pieces must be removed, and a hole left at the end next the boiler for a return-pipe. The boiler should be several feet below the tank, and the pipes should be as high as the tank. It would be better still if the pipes returned through the tank. But then you might do without a tank at all. For nicety it would be as well to have the top and bottom heat independent of each other. We should have no difficulty in heating such a house from the tank alone, with merely connecting-pipes between the top of the boiler for the flow and the bottom for the return—a division along the middle of the boiler, with the exception of a six-inch opening at the farther end. In that case, supposing the wooden tank were covered with slate, we would place three or four inches of rough rubble over it, and leave an inch opening at each side to let the heat rise into the atmosphere of the house, a few slips of wood to fit the openings giving us the power of having much or little top heat as wanted. As you have the tank this last would be the simplest way.

COLOURING BRICKWORK INSIDE PEACH-HOUSE (H. M. H.).—No colour is so good as white with a slight admixture of blue. It looks aerial and well, and increases by reflexion the amount of light in the house. Pink or any fancy colour is not in good taste, nor does it look well in a garden structure. The Crystal Palace is a bluish-white inside.

POTATOES FOR FORCING (A. B. C.).—The two best are Ash-leaved Kidney and Fox's Seedling. For three early Melons you may grow Beechwood, Bromham Hall, and Trentham Hybrid. Any of these, if the summer proves favourable and the plants have been kept growing in pots, might be turned into the hotbed in May from which the Potatoes were gone, with a fair prospect of a crop. Covering the surface over the rows of Peas and Beans with fine coal ashes to the depth of an inch will exclude mice.

BUDDING ROSES (J. Briscoe).—In our No. 610, p. 155, full directions are given too long for repetition. You can have it by post for four postage stamps.

NAMES OF PEARS (T. G. F.).—No. 1, St. Germain; No. 2, Winter Nellis, unripe. The two Pears you mention had not been tested to Dr. Hogg's satisfaction when his "Fruit Manual" was published.

NAME OF PLANT (An Old Subscriber).—The plant sent you from South Wales is *Bryum ligulatum*, or, as it is more fashionable to call it, *Mnium undulatum*.

POULTRY AND BEE-KEEPER'S CHRONICLE.

POULTRY SHOWS.

JANUARY 16th and 17th. POULTON-LE-FYLDE. *Hon. Sec.*, Mr. J. S. Butler. Entries close January 1st.

JANUARY 25th and 26th. CUMBERLAND AND WESTMORLAND. *Secs.*, Mr. M. W. Hastwell and Mr. W. T. Armstrong. Entries close January 12.

JANUARY 30th and 31st. ULVERSTON. *Secs.*, Mr. T. Robinson and Mr. J. Kitchen. Entries close January 19th.

FEBRUARY 6th and 7th. LIVERPOOL. (Poultry and Pigeons). *Sec.*, Mr. A. Edmondson, 4, Dale Street. Entries close January 19.

MARCH 13th and 14th. PLYMOUTH. *Sec.*, Mr. W. R. Elliott, 5, Windsor Villas. Entries close March 1.

JUNE 4th, 5th, 6th, and 7th. BATH AND WEST OF ENGLAND.

N.B.—Secretaries will oblige us by sending early copies of their lists.

POULTRY MANAGEMENT IN SEVERE WEATHER.

CERTAIN truths are constantly repeated till they become tiresome, yet spite of repetition and truth they are neglected. Who does not know that to treat an indulgence in some unwholesome but toothsome dish is sure to produce discomfort? Or that the three or four extra glasses for friendship's sake generally bear their fruit in the morning?

Those who have accomplished their threescore, it may be threescore and ten years, can count their visits to their medical man, their complaints, and if he were an intimate friend his kindly remonstrance and the assertion fully corroborated by the conviction of the patient that there was really nothing seriously the matter; indeed, nothing that a little medicine and a little abstinence would not remove. Such a one will laugh at *Punch* and the periodical visit of the doctor to Master Adolphus the day after Twelfthnight. "Not much the matter, only he ate Garibaldi, a windmill, Lord Clyde, and Tom Sayers off the twelfth-cake." Spite of his laughing, he deliberately takes the chair on the second Thursday in January, presiding over the "Monthly Moisteners."

"My dear," says Mrs. Freedraught, "I like you to go out and enjoy yourself; but recollect what Dr. Driver said last time."

Freedraught is a good husband, and lives on the best of terms with his wife, but is just a little impatient on these occasions, and pettishly sends Dr. Driver to Jericho, although he knows his wife is right. He knows he will commit excess, and he knows he will modestly allow his good wife to send for the doctor in the morning, because he will assure her it is not what he ate or what he drank, nor is it the headache; but he is really ill.

Miss Margaret Malcolm keeps poultry, and is so impatient for her COTTAGE GARDENER every Tuesday that it has passed into a byword in the family. But enthusiastic as she is, the frost lasts longer than her patience. At first, during the first week, she was careful every morning to gather up all the crumbs and crusts, to soak them in warm milk and water, and to hurry from the table as soon as *bienséance* allowed, in order to feed her pets. Then just as she gathered scraps of knowledge from THE COTTAGE GARDENER, so she gathered scraps of meat from the table at luncheon all for the fowls' food. But the human mind and appetite must have variety. In one of our poultry excursions lately we had occasion to visit the fattening-house, and found two fowls provided with meal, sugar, suet, and new milk enough to last them three weeks.

"Mrs. Flamingo," said we, "these birds have too much food by half."

The old lady smiled half cunningly, half incredulously, and said, "They would never have too much of a good thing."

"But," we said, "they will be tired of the sight of it."

"What!" cried the dame, "tired of such food as that!"

"Yes," we answered; "and you would be tired of turtle and venison if you had it every day."

"Would I?" muttered the poultry-feeder. "Tired of turtle and venison! Try me, that's all."

The old lady did not believe in the necessity for a change; but she was wrong, and the same thing every day becomes more than tiresome.

The frost continued, and Miss Margaret Malcolm sickened at the *petits soins* her poultry required.

Saturday morning at breakfast-time word was brought that a hen, which should have come off that day, had not hatched; that the eggs had been tried, and all were found to be chilled; that the best Dorking cock had his comb and toes frozen; and that the man hoped she would come directly after breakfast.

"I declare," said Miss Malcolm, "I don't know what to do. I am tired of it."

"Consult THE COTTAGE GARDENER," said her brother, rather quizzingly.

"I am tired of THE COTTAGE GARDENER," was her reply. "It is the old story over and over again, and you have just heard the result."

Nevertheless, the favourite paper was read, and the little hints of last week were profitably adopted. She was surprised to find how readily the birds fed by lamp-light. She was amused at the decided preference they showed for beer over water; and she was delighted at the improvement a few days made in their appearance. We advise all our friends to follow her example.

Like all other pursuits, poultry-keeping only gives success as the reward of painstaking. Using one, the other is certain. It is, however, important that the birds, when the severe weather ends, should be in perfect and thorough condition to fulfil all duties as breeders. As it is, the cold will make most yards three weeks or a month late in bringing out their early chickens; it is, therefore, most essential that the first fine day should find the birds full of condition. As they will pass much of their time in their houses let them be provided with a large dust-heap, and let it lie where full light can stream upon it, and where it will catch any little sunshine we may have the good fortune to see. We hope ere another paper issues from the press the weather will have changed; if it has, do not discontinue your generous feeding. It will be some time before there is any natural food, and at this season birds must not lose ground.

Our thrice-told tale is over, our old advice is repeated. Writing by the light of a lamp at eleven A.M., thermometer in the room two degrees below freezing, and fog outside the colour of peasoup, we claim some merit for having endeavoured to accomplish our task cheerfully, even though there may be no startling novelty in it.

SOUTH OF IRELAND POULTRY, PIGEON, AND BIRD SOCIETY.

THE first Exhibition of this Society was held at Cork on the 2nd and 3rd inst., in the new room of the Athenæum, and was as successful as its best friends could desire.

The Judges appointed on the poultry were—J. Blandford, Esq., Ducloyne, and Wm. Corbett, Esq., Castle Connell; and

those for the Pigeons were—Dean Wolstenholme, Esq., of London, and John Austen, Esq., Sunday's Well.

The following is a list of the prizes awarded:—

SPANISH (White-faced).—First, Mrs. Dring. Second, R. W. Boyle. Third, R. P. Williams.

SPANISH (any other variety).—First, J. C. Perry. Second, J. W. Dyas. Third, Rev. J. O'Sullivan.

DORKING (White or Grey).—First, A. E. Ussher. Second, R. P. Williams. Third, T. O'Grady.

DORKING (Coloured).—First, Mrs. Dring. Second, J. C. Perry. Third, R. G. Adams.

COCHIN-CHINA (Buff).—First and Second, J. C. Perry.

COCHIN-CHINA (Partridge).—First, Mrs. Gubbins. Second, J. C. Perry.

COCHIN-CHINA (White).—First, J. C. Perry. Second, T. Hare.

BRAHMA FOOTRA.—First, F. Hodder. Second, Hon. Mrs. Bernard. Third, J. C. Perry.

POLAND (Gold and Silver-crested).—First, F. Hodder. Second and Third, R. P. Williams.

POLAND (Black, with White Crests).—First, R. P. Williams. Second, F. Hodder.

HAMBURGH (Gold and Silver).—First, Hon. Mrs. Bernard. Second, R. P. Williams. Third, J. C. Perry.

GAME (Black or Brown Red).—First, T. W. Mayo. Second, Mrs. Gubbins. Third, P. Donovan.

GAME (Grey).—First, P. Donovan. Second, J. Busteed. Third, J. Wigmore.

GAME (other varieties).—First and Third, J. Dowling. Second, J. Denchy.

BANTAMS (Sebright).—First and Second, F. Hodder. Third, J. Dowling.

BANTAMS (Feathered-legs).—First, J. Donegan. Second, J. Dowling.

BANTAMS (Smooth Legs).—First, J. Dowling. Second, Dr. Wycherly. Third, J. P. Carlton.

TURKEYS (Norfolk).—First and Second, R. W. Boyle.

TURKEYS (American Wild).—Prize, T. M. Green.

GESE (Toulouse).—First, R. W. Boyle. Third, T. O'Grady.

GESE (Polish).—Prize, C. Crofts.

DUCKS (Aylesbury).—First, J. C. Perry. Second, Rev. J. O'Sullivan.

DUCKS (Rouen).—Prize, R. P. Williams.

PIGEONS.—*Black Carriers*.—First, J. Perrott. Second, T. Hare. Third, Dr. Harvey. *Dun Carriers*.—First and Third, Dr. Harvey. Second, Rev. J. O'Sullivan. *Black Pouters*.—First, P. Goulding. Second and Third, Dr. Harvey. *Blue Pouters*.—First and Second, Dr. Harvey.

Third, J. Perrott. *Red Pouters*.—First and Second, Dr. Harvey. Third, Rev. J. O'Sullivan. *White Pouters*.—First, Dr. Harvey. Second and Third, J. Perrott. *Pouters* (any other colour).—First, P. Goulding. Second and Third, Dr. Harvey. *Almond Tumblers*.—First, Dr. Harvey. Second, T. Hare. Third, P. Goulding. Commended, Rev. J. O'Sullivan.

Kites.—First, Dr. Harvey. Second, Rev. J. O'Sullivan. Third, P. Goulding. *Blue Beards*.—First, T. Davis. Second, Rev. J. O'Sullivan. Third, J. Perrott. *Other Short Faces*.—First, T. Hare. Second and Third, Dr. Harvey. *White Fantails*.—First, T. O'Grady. Second, T. Hare. *Black Fantails*.—Prize, Rev. J. O'Sullivan. *Yellow Jacobins*.—First, J. Lloyd. Second, Rev. J. O'Sullivan. Third, E. F. Hunt. *Black Jacobins*.—Prize, T. O'Grady. *Red Jacobins*.—Prize, H. Keating. *White Jacobins*.—First, J. Perrott. Second, Rev. J. O'Sullivan. *Mottle Jacobins*.—First and Second, J. Perrott. *Nuns*.—First, Rev. J. O'Sullivan. Second, T. O'Grady. Third, J. Good. *Turbits*.—Prize, N. Daly. *Barbs*.—First, T. Hare. Second, Rev. J. O'Sullivan. *Trumpeters*.—First, T. O'Grady. Second, J. Donegan. *Common Tumblers* (Yellow).—Prize, Rev. J. O'Sullivan. *Red Tumblers*.—Prize, T. O'Grady. *Tumblers* (any colour).—First, J. Perrott. Second, T. O'Grady.

Song Birds.—*Jonque Norwich Canaries*.—Prize, P. Goulding. *Yellow Canaries*.—Prize, R. Acheson. *Green Canaries*.—First, J. Dowling. Second, J. Beale. *Crested Mealy Canaries*.—Prize, J. Dowling. *Pied Canaries*.—First, Rev. J. O'Sullivan. Second, J. Dowling. *Goldfinch Mules*.—First, J. Corcoran. Second, W. Kelly. *Linnet Mules*.—First, J. O'Sullivan. Second, T. Walsh. *Blackbird*.—Prize, J. O'Connor. *Thrushes*.—First, J. Lloyd. Second, L. Walsh. *Nightingales*.—First and Second, Rev. J. O'Sullivan. *Black Caps*.—First and Second, Rev. J. O'Sullivan. *Robins*.—First, J. Dowling. Second, D. Walsh. *Woodlarks*.—First and Second, J. Dowling. *Skylarks*.—First and Second, D. Walsh. *Bullfinches*.—First and Second, F. Hodder. *Goldfinches*.—First and Second, J. Dowling. *Linnets*.—First and Second, Rev. J. O'Sullivan.

JUDGES OF CAGE BIRDS.—Wm. Thomas Jones, Esq., Great George's Street, Cork; Adam D. Parker, Esq., Landscape, Sunday's Well, Cork.

OUR LETTER BOX.

BANTAMS IN A GARDEN (*One who would keep them*).—The Bantams to which we referred in a former answer to correspondents were Sebrights. In one case they were kept in a large garden of an acre. There was considerable extent of greensward; there were beds of geraniums, verbenas, &c., fancy borders, and all the accompaniments of a flower garden; there was a hedge of laurels at the far end, and they were generally there save when a call or a tap on the glass summoned them. Such was always the case after breakfast; and when they had eaten the usual meal of crumbs, &c., they would strut about the lawn without doing the least damage or offending in any way. Lest it may be thought the extent of the garden was its protection, we will say that for some time we kept four in a flower

garden only thirteen yards by five. It was bounded by a small shrubbery, which they used much, and they never did damage of any kind. A Bantam hen will cover eleven eggs, and she is a good, careful mother. A larger hen would cover twenty-four, but they never rear the chickens—they trample the little things, and every time they tread on one they kill it.

REARING GOLD AND SILVER PHEASANTS (*Idem*).—They are easy to rear. A common hen (fowl), will cover seventeen Golden or thirteen Silver. It is, however, good policy to divide the eggs more, because failure is not then so fatal; and in setting Pheasants' eggs it is always necessary to recollect there is only one season for them. They cannot be replaced if they are spoiled, and therefore every precaution must be taken.

BRAHMA FOOTRAS (*Idem*).—The Pencilled Brahmas are the most admired, and rather more expensive than the light ones. The Sultan's fowls were first imported by Miss Watts. They are very pretty, cheerful, good laying birds, but having no remarkable properties they have not much increased. They are quite white-feathered-legged, vulture-hocked, top-knotted, and short-legged. The Andalusians have much in common with the Spanish, inasmuch as they are of the same form and stature. They differ, having blue or slate plumage with darker hackle. Their faces should not be white all over, and they are not subject to such tyrannical laws about combs.

RABBIT ENCLOSURE (*Bury Thorn*).—I should think your walled enclosure (40 feet by 15 feet), would answer the purpose for Rabbit-keeping very well. I would advise a mound of earth thrown up in the centre—say about 20 feet long, 8 or 10 feet broad, 4 feet high. Over this a light span-roof either of asphalt or feathery-edge boarding; or throw the earth against the eight-foot wall, and have a leaning roof. On the two-foot wall you will require wire netting. If cats are numerous I cannot tell you how to provide against their attacks unless by covering with wire or twine netting. They are great enemies to young Rabbits. The Silver Greys, Himalayans, Patagonians are all good kinds to keep, but it depends whether you keep for table use only or for profit. The above three kinds pay well for breeding, being in good demand.—R. S. S. (*Sam*).—Your space (36 feet by 12 feet), being small, I should advise paving either with tiles, or, for economy, with brick rubbish well beaten down, and a coating of Portland cement, giving a good fall to carry off rain and urine, a small drain running along by the wall to carry off the above. You may throw up a mound of earth at one end or along the wall. Over this you may cover with loppings of trees and hedges. Rabbits like privacy and are fond of the bark. In the earth they will burrow and amuse themselves, and it will also afford them protection. I would not advise turning the breeding Rabbits into the enclosure, it being too small for breeding as in warrens; but erect a shed at one end, in which keep your breeding stock in hutches, and keep the court for the young, which you may turn out from six to eight weeks old. By this means you will be able to breed a large quantity. You will require some kind of roofing to protect from heavy rains, and which you will see explained to "BURY THORN." The Chinchillas and Himalayans are very good kinds to keep, being in much demand. If a large Rabbit for table use, the Patagonians are the best.—R. S. S.

FEEDING OF YOUNG RABBITS (*A Novice*).—The green food should be dried before giving it to your Rabbits. Green food either wet with dew or rain is bad, and will bring on the rot. If your Rabbits have been used to have plenty of green food it will not hurt them, but any sudden change of food will not agree with them.—R. S. S.

STEWARTON HIVES (*An Amateur Hivemaker*).—I suppose you mean the square comb frame hives. They measure internally 13½ inches each way, contain seven frames, the bars of which are 1½ inch wide. These, for several reasons, are in my opinion not nearly so good as the celebrated octagons in everyday use in Ayrshire. They are 14 inches front to back window, same across the handles. The body, or breeding-boxes, are 6 inches deep; the honey, or supers, 4 inches. These are both fitted with seven fixed bars 1½ inch wide. A single set (or three body and one honey-box) is sold in Glasgow shops for £1; the frame-hives, a set (two lower and one super), for 16s. Parties on the spot can, of course, procure them at a still cheaper rate from the makers. Write Mr. Wm. Eaglesham, Stewarton, who advertises in this journal, and he will quote the prices there, which will, no doubt, be somewhat regulated by the number required. I believe they may be had with 1½-inch bars moveable if required. I may mention, as a useful hint for the benefit of amateur hivemakers in general, the plan I adopt is to order along with my boxes a good supply of bars and slides—long lengths preferable (7 feet for the former, 7½ for the latter), 1½ inch wide for stock-hives, 1½ for supers. Having them all ready to hand, any amateur can easily substitute this neat and ingenious device to all his old hives, or new ones about to be used, whether of wood or straw. And from having now all the flat-topped hives in my apiary so transformed, can speak of its decided superiority in many ways over the clumsy old crown-boards and adapters recommended by bee-writers. When on this subject I may say that scientific aparians, not up to Stewarton practice, may possibly object to the width of the bars in the breeding-boxes; but as Ayrshire bee-keepers are thoroughly practical—their chief aim being the production of the wonderfully beautiful supers they send to market—give their little friends, in return for the strict guide-comb drill to which they are subjected upstairs, full latitude to deport themselves and giving their cradles after their own fashion in the nurseries below; and all the more they prosper for it too.—A RENFREWSHIRE BEE-KEEPER.

LONDON MARKETS.—JANUARY 14.

POULTRY.

Frost and snow are doing their work. The supply decreases; the demand grows less; and trade declines.

| | Each—s. d. | s. d. | | Each—s. d. | s. d. |
|---------------|------------|---------|-----|------------|------------|
| Cock Turkeys | 14 | 0 to 16 | 0 | Pheasants | 4 6 to 5 0 |
| Hen do | 7 | 0 " | 8 0 | Partridges | 1 9 " 2 0 |
| Capons | 0 | 0 " | 0 0 | Grouse | 0 0 " 0 0 |
| Large Fowls | 5 | 0 " | 5 6 | Pigeons | 0 8 " 0 9 |
| Smaller Fowls | 3 | 6 " | 4 0 | Hares | 2 6 " 3 0 |
| Chickens | 2 | 6 " | 3 0 | Rabbits | 1 4 " 1 5 |
| Geese | 6 | 0 " | 6 6 | Wild ditto | 0 8 " 0 9 |

WEEKLY CALENDAR.

| Day of M'nth | Day of Week. | JANUARY 22—28, 1861. | WEATHER NEAR LONDON IN 1860. | | | | Sun Rises. | Sun Sets. | Moon Rises and Sets | Moon's Age. | Clock before Sun. | Day of Year. |
|--------------|--------------|---------------------------------|------------------------------|-----------|-------|-----------------|------------|-----------|---------------------|-------------|-------------------|--------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | |
| 22 | TU | Cluytia alaternoides. | 29.225—29.193 | deg. deg. | W. | — | m. h. | m. h. | m. h. | | m. s. | |
| 23 | W | Banksia paludosa. | 29.373—28.876 | 47—30 | S.W. | ·08 | 55 af 7 | 30 af 4 | 28 m 4 | 11 | 11 58 | 22 |
| 24 | TH | Banksia marcescens. | 28.718—28.638 | 48—34 | S.W. | ·12 | 53 7 | 31 4 | 30 5 | 12 | 12 14 | 23 |
| 25 | F | Conv. St. PAUL. PRINCESS ROYAL. | 28.626—29.028 | 47—30 | S.W. | ·14 | 52 7 | 33 4 | 21 6 | 13 | 12 28 | 24 |
| 26 | S | Phylla ericoides. [MAR. 1858. | 29.626—29.028 | 40—20 | N.W. | ·04 | 51 7 | 35 4 | 0 7 | 14 | 12 42 | 25 |
| 27 | SUN | SEPTUAGESIMA SUNDAY. | 29.810—29.226 | 50—10 | S. | ·14 | 49 7 | 36 4 | rises | ○ | 12 55 | 26 |
| 28 | M | Phylla erubescens. | 29.750—29.154 | 53—23 | S.W. | — | 48 7 | 38 4 | 6 a 6 | 16 | 13 7 | 27 |
| | | | 30.012—29.659 | 51—34 | S.W. | ·09 | 47 7 | 40 4 | 33 7 | 17 | 13 18 | 28 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 44.0° and 32.0° respectively. The greatest heat, 58°, occurred on the 23rd, in 1834; and the lowest cold, 15°, on the 27th, in 1855. During the period 131 days were fine, and on 107 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

If any part of the garden is wet, drain it effectually. Make drains from 3 feet to 4 feet deep, and about 20 feet apart. Use tiles and soles, and place 6 inches of brick-bats, stones, or clinkers over the tiles, and before filling in the soil shake a small quantity of litter over the stones or other materials, which will render the drainage more perfect. *Broccoli*, a little early Cape sown in a box and placed in heat will be serviceable for early summer use. *Cabbage*, a little may be sown as advised for Broccoli if there is a scarcity of autumn-sown plants; *Atkins' Matchless* is a good sort for the purpose. *Cauliflower*, sow a little as advised for Broccoli. *Celery*, sow a little in a box for early summer use for soups, &c. No dependance to be placed on it for a crop, as it will soon run to seed. *Lettuce*, sow some black-seeded Cos in boxes. Give air to plants in frames when the weather will permit. *Onions*, sow some seed of the Spanish in boxes for planting out in the spring. *Peas* and *Beans*, sow in pots or boxes for transplanting. The above sowings will be found useful in the spring if the autumn sown have been killed by the unusual severity of this season, or have otherwise failed. *Dwarf Kidney Beans*, sow every three weeks for a regular supply of them: *Fulmer's* and *Robin's Egg* are the best for forcing purposes. *Tomatoes*, sow some seed immediately, that strong plants may be ready to turn out in good time.

FLOWER GARDEN.

If the weather permits trench the flower-beds that are empty, adding leaf mould, or some light rich compost. The deeper and more frequently these beds are turned before planting the better the plants will flourish in them. Prepare ground for *Roses*; if the soil is poor, remove a portion, and replace it with rotten dung and loam.

STOVE.

Examine the various tubers and bulbs that are dormant, and see that they are in a proper condition, neither suffering from wet or mouldiness. As soon as *Luculia gratissima* has done blooming let its side branches be shortened in a little, and then be placed in heat to produce cuttings for propagation. When the shoots are about 2 inches long, tie a string tightly below the lowest joint, and as soon as the bark has swelled a little, which may be expected in a fortnight, the cuttings to be taken off, potted singly in small pots, plunged in a gentle bottom heat, covered with a hand-glass, where they will strike very readily. A few of the old roots of *Dahlias* to be plunged in tan to excite them to grow for cuttings. Sow seeds of tender annuals, as *Cockscombs*, *Amaranths*, &c., in pots filled with a mixture of two-thirds light rich loam and one-third leaf mould; cover the seeds very lightly, and plunge the pots into a hotbed. In watering, do it with a fine rose watering-pot or with a syringe.

GREENHOUSE AND CONSERVATORY.

Avoid by all means a high temperature here; exclude No. 643.—Vol. XXV. No. 17.

the frost, and that is all you need care about. A forced and premature growth will injure plants; by repressing growth now a more perfect and healthy development will follow at a later and more favourable season. Recollect there is less danger from too little than from too much water. Look well to the plants standing near the heating apparatus that they may not suffer for want of water. Give air if the weather is at all favourable, but avoid currents, especially north-easterly winds. *Pelargoniums* intended for blooming in May, if not already shifted, to be removed into their blooming-pots without delay. Late-blooming plants to be stopped preparatory to being potted about the end of next month. As the herbaceous *Calceolarias* make an early and quick growth, they will require to be encouraged, and kept clean. *Cinerarias* will also require careful attention: water when necessary, but not over the leaves. The *Ten-week*, *Russian* and *Prussian Stocks* to be sown in pots, and placed in a gentle heat. Sow seeds of *Schizanthus retusus*, and other species, for a summer display in a greenhouse. Plant *Tuberoses* in small pots filled with rich loam, placing a root shallow in each pot, and then plunging the pots in a hotbed. Sow *Mignonette*, to bloom early.

FORCING-PIT.

Pinks, *Carnations*, and *Hyacinths*, if taken in here will come early into flower. All plants of this kind, as well as *Roses*, *Lilacs*, &c., will, during forcing, require a little water sprinkling over their leaves about three times a week. This is best done by a syringe.

PITS AND FRAMES.

Never give heat to *Heaths* as long as frost can be kept out by coverings; a few degrees of frost will never injure *Cape Heaths*, whereas fires are their ruin. So it is with *New Holland plants*. W. KEANE.

DOINGS OF THE LAST WEEK.

WEDNESDAY and Thursday keen frost with bright sun and wind due south. Friday and Saturday wind south-west, with less sun; inclining to thaw on Sunday, but wind veered to east and frost again on Monday morning. No cold-pits have yet been uncovered, but the surface covering has been broken night and morning when the cold was very severe. Believe that most things under glass and even under straw-hurdles are pretty safe. I almost wish we had a little more of the snow that has been so plentiful in some parts. Owing to being exposed, and standing high and having sweeping winds, we have scarcely ever had more than an inch or an inch and a half. Full-grown *Savoy*s have suffered so much, that I fear kitchen-maids will not have patience to give them plenty of the coldest water to bring them back. We have seen such vegetables put at once in a warm place, or in warmish water, and the result was, vegetables not fit for a beast to eat. A protection of evergreen boughs was put over the largest, that when a thaw came they might thaw gradually. Younger plants and smaller heads have stood well. *Scotch Kale*, *Cottager's Kale*, and *Brussels Sprouts*, all right. *Broccoli* exposed will be injured. I should have covered more if I could. The small quarter banded with stubble

and spruce branches laid along the rows will, I think, be all right. Cauliflowers (young ones), under glasses, never uncovered since they were frozen, and then had some litter thrown over them. Lettuces and Endive the same. Nailed a little when the sun was bright, pruned orchard trees, cut back Laurels, as the ground was so hard for getting everything taken off nicely. In mornings and afternoons, turned heaps of soil, made sticks, tied mats, and washed pots in a warm place, allowing the pots to remain there until thoroughly dry. Put soil into places heated a little so as to be mellow and warm for potting, so as if this weather continues to be able to pot many things from stove and reserve-houses. The thermometer being above freezing on Saturday, moved a lot of bedding and other plants from the floor of a pit devoted to Figs, and placed them in the vinery which was cleaned last week, so that the Fig-house may be thoroughly washed, cleaned, &c., glass, walls, and all the rest of it. Keep putting in a few cuttings as time could be spared, giving them a little bottom heat, and where the top heat averages 60°. Some Black Prince Strawberries first placed in a frame and then removed to a vinery-pit are beginning to show bloom in an average temperature of 50°, but owing to the absence of sunshine, expect the first flowers to be rather weak. Brought Strawberries from a frame into a vinery, where the temperature will range from 45° to 50°, and filled the two-light box again with Strawberry plants, from under protection where the frost had just crusted them a little. There is just a little heat from leaves in the frame, and the precaution taken is not of so much importance as if the heat were greater, the precaution that these plants do not stand plunged among the leaves, but the pots have a hard bottom to stand on—such as a slab or slate, or anything of that kind, and then leaves are packed between the pots. The object of all this is to gently excite the roots into action; *but not to encourage these roots to go down among the leaves.* For late crops we would not care so much; but for early crops—say, commencing in November, December, or even January, I consider this simple arrangement of very great importance; as whatever, at an early period is apt greatly to encourage mere growth, before the flowers are well up will, most likely, give you leaves and no fruit. On the same account the plants moved from the frame where the first start has just been given to the roots, will stand on narrow shelves, either bare or with the slightest sprinkling of moss beneath them. The plants hitherto used are in 48-sized pots, which I prefer for the first forcing, as in small pots the plants are apt to be first matured. All these plants are with us much smaller this year than usual, owing to want of sun and heat last year; but I have often had fine crops from plants not extra strong and luxuriant.

It was not these plants, in pots, however, I was thinking about when I said, last week, I would have a word about Strawberries, but anent those growing out of doors. Many of the best kinds are so tender in some places, that they do little good after such a winter as this, if not a little protected. A first-rate gardener in the midland counties told me, as a *great secret*, that he had a rare device for managing all that, and what think you was it? Why earthing them up before winter and letting the buds find their way out in the spring! When I have a chance of accepting our friend's invitation, I will make a point of telling all about the great secret. Thus far, we have long noticed that rows of Strawberries that were cleaned, forked over, and dressed with littery dung between the rows in autumn, suffered but little from frost, cold, and wet, in comparison of those undressed, or with the soil left on the surface as even and hard beat as the autumn rains had left it. Every tyro knows that the harder and smoother the surface of the ground, the farther the frost will penetrate. Now, this autumn, or rather say in November, I found the buds of the plants were more exposed than usual, that even the collars could be moved, and some of the roots were above ground. The ground was too wet to adopt our friend's plan, but we took a leaf out of his book notwithstanding. We had a large heap of earth, clay, prunings, roots, and weeds, which it would have been very unsafe to take to the general rubbish-heap, and this, set a-going with the prunings, was thoroughly burned, and then several barrowloads were placed along each row, forming a cone close to the buds and covering them all except the very points. A cone requiring much wet thoroughly to soak, a good safeguard, therefore, against severe frost, and telling slugs and all such comers to keep at a distance. The space between the rows was slightly forked afresh, and a little rotten leaves put between. But what has all this to do with the doings of the week? Just this, that so long as the snow covered them I considered the

tenderest quite safe, but when the winds and the partial thaws left the buds bare, spruce branches were laid along the rows.—R. F.

EGGLESTON'S CONQUEROR CUCUMBER.

I SAW (December 1st) at C. Binns, Esq., Clay Cross, one of the finest houses of Cucumbers I ever met with. The kind is called by Mr. Eggleston, the gardener, his Conqueror. It is a cross three times removed from Sion House; a great bearer, fine flavour, suitable for any purpose. It has beaten all before it round here for miles, and the amateurs and gardeners will not grow any other kind if they can help it. At the Clay Cross Horticultural Exhibition, in August last, it beat all other kinds, including the celebrated Hamilton's White Spine. It has been grown 28 inches long, 9½ inches round, and weighing 5 lbs. I understand seeds of it were sent to the Royal Horticultural Society for trial during the past season, but as the trials there have proved a failure, it could not be noticed.

Mr. Eggleston tells me that he sent a fruit to Mr. Eyles, with seed, and the latter in his reply says:—"I thank you for the splendid Cucumber. It is a remarkably fine variety."

I would advise the readers of THE COTTAGE GARDENER who really want a truly useful Cucumber, very prolific, fine flavour, a hardy constitution, a good early forcer, and a fine show kind, to communicate by letter at once to Mr. Eggleston. I understand his supply of seed is limited, it being a very shy seeder. I understand it will shortly be advertised in your paper.—BEN BOLT.

MY COLD PIT—HEATING BY HOT AIR.

VARIEGATED ARABIS—LINTON HALL WINTER GARDEN.

IN the report on my cold pit I said the frost gained on the brickwork at the back to the extent of two courses of bricks, and in two more nights the whole of the wall, which is nine inches thick, was frosted. I took alarm, and quitted without giving notice to quit. The wall is a dividing fence between two estates, or the "march" dividing two properties, as Dandy Dinmont would say, and I could not secure it from the other side. No matter how safe my plants were from the frost in my own garden, they lay in great danger from the other side, and I removed them, and put them into safe quarters.

Brick pits are not one-half so good for growing plants in during the summer as turf pits, or boarded pits, and here is an actual instance of what we have all of us been preaching about—the treachery of brickwork against hard frost; so that, unless brick pits are lined, hotbed-like, with something or other during very hard winters, the expense in firing to keep the frost at bay must be taken in the account, and must be very considerable. But I mention my flitting in the dead of winter to save other gardeners from the charge of having lost plants in cold pits, while I saved mine, which were put up, as it were, for a trial of skill and perseverance in doing so much at no more cost than my own labour and the value of the covering.

Thousands lose plants, more or less, every hard winter, after putting on more covering than I did this winter, because they did not protect the brickwork; and the reason they did not do that was that they did not know the frost could get through a brick wall of ordinary thickness, but a glass wall of nine inches in thickness, if we could have it, would be more safe than a nine-inch of brickwork. My friend with the hot-air-heated conservatory advised me to adopt that plan with my pit, but then it was too late to think of it. I shall certainly give his plan a fair trial another year, if I should live so long. Meantime, and till we hear from him, we ought to keep the hot air in motion, and receive all notions about it. One notion which he suggested for my pit is well worth consideration and study. It was this: The furnace was to be at one end of the pit, the pit being seventy-two feet long, the current of hot air was to be introduced at the top next to the back wall just under the top corner of the last light, and at the other end he recommended that a

ventilator should be placed for the escape of the cold air in the pit, when the hot air was first let in.

In the Polmaise system all the confined and contaminated cold air in a pit or house has to be passed and burnt between hot plates of red hot iron, and returned to the same house in an endless stream, or current, back and round again and again as long as the heat is wanted.

One does not like to ask many questions in social conversation, else I should have asked my friend why he advised the ventilator for my pit, seeing he had no provision for letting off the cold air from his conservatory. A ventilator in the end of my pit may, or may not, be necessary. No one, I believe, can positively prove that by inference, the plan must be put to the test of actual practice before a decided opinion can be given. No one could say beforehand that a rushing and continuous flow of warm air could be passed into a large conservatory or other room without some opening on purpose to let out as much cold or cooled air; but all the opening in his conservatory is that between the laps of the panes of glass in the roof—the front, being all glazed like windows, is just as air-tight as the windows of the best-built mansions. Still he must have thought my pit too much air-tight, for this mode of heating, without some such contrivance.

Another thing occurring to me as essential to this mode of heating (which heating we must call after the inventor as soon as we have his name and consent), is that the extreme heating of the Polmaise, in passing through the furnace, must be altogether avoided. That was most certainly the main cause of the total failure of the true Polmaise. But in this mode there need be nothing of the kind. True, we must learn if the system will work on the level, and we must also learn every other particular which is not already explained; but there is no question about the intensity of the heat which any one who is accustomed to hothouses and the requirements of plants may not settle at once, and before laying a brick.

Take the heated conservatory and my pit as extreme examples, the largest and the smallest, the farthest off and the nearest to the hot-air chamber. The plants in both cases are of the same nature, and the same degree of heat is to be aimed at. The heat which rises into the conservatory through the two openings in the pathway at one end of the house would suit my plants and my pit to the same degree and nicety as it does there; but the heat in my air-chamber would need to be very different from that of the one to the conservatory, not on account of the difference of the sizes of the two plant-places, but owing to the difference of the distances the two air-chambers are, or would be, from the place to be heated. His air-chamber is, say, four yards from the escape of the hot air to the conservatory, and the distance of my air-chamber at the end of the pit is merely the thickness of the brickwork which forms the end of the pit. If the hot air in my air-chamber was as hot as that in his air-chamber, it would, probably, be too hot for my plants, as it could not get cooled in passing the short distance like that into the conservatory: therefore, and considering the smallness of the pit, the heat in the hot-air chamber for the pit need not have more than one-fourth of the heat in that for the conservatory; and, therefore, this mode of heating pits and small greenhouses I conceive to be as safe for the life and well-being of ornamental plants as the best system now in use. The heated air from a closed hot-water system must be as hot and as dry on leaving the surface of the pipes, and other ironwork, as it would need to be in leaving the air-chamber, or when it entered the pit or house. Then the rest of the difference would be as that between a baker's oven and a hot-water apparatus. If the oven is too hot, or not sufficiently hot for the purpose, work the ventilators or the fire before you let the heat go to the greenhouse. Fresh air is constantly warmed, but must not be baked or roasted in the oven on its passage to the plants: therefore, and for all very small places, it would be necessary to have control

over the hot-air channel between the oven or hot-air chamber and the entrance to the house or pit. That could be done by a common "damper" or slide, to stop the current if it happened to get too hot.

For all small or moderate houses I would shun metal. No more iron than the fire-bars and furnace-doors would I allow, as far as I can see through it at present. The air-chamber I should make more safe than the head and neck of the best flue now in use, and use fire-brick and fire-mortar between the top of the fireplace and the bottom of the air-chamber, or, say, the flame would and could touch none but firebricks. The air-chamber I would make much larger in proportion than the fireplace, so as to have the air not so hot. The idea of appropriating the heat in the ash-pit when it is half full of hot ashes is new, but not so economical in one sense as it might seem. Part of it is expended on the air which passes over it to the bottom of the fire through the fire-bars, but a good portion of it is lost in the side brickwork; and when I shall make the air-chamber to my pit I shall have it all in one completely surrounding the ash-pit and fireplace; and when this mass of brickwork is well heated, but not a fierce heat, as from heated metal, a great source of heat is obtained and is in reserve even if the fire is let out, but by a smouldering and banked-up fire, as is usually done the last thing at night, the source of heat is kept up for a whole night, and it seems to me a very feasible scheme at a comparatively small cost and trouble.

Turning to the universal topic of bedding plants, I am pleased to hear that the "Doctor's Boy" has kept his nice seedling Geranium, of which he had sent me two plants—which I lost, however, with the early frost of 1859. It is of the *Lucia rosea* breed, and is more compact than even Mr. Kinghorn's Christine. The Variegated Arabis which was first recommended by the "YORKSHIRE CLERGYMAN," and last week by Mr. Robson, is the true *Arabis albida*, which is a month earlier than alpina, but in other respects is hardly to be distinguished from *Arabis alpina* by common observers, and *caucasica* was an old name for the same plant, though never applied to it out of old books. It must have been the reason why this excellent edging plant has not been discussed long since, that no one was quite sure what name to apply to it; but now, to avoid confusion, the old name by which it has been known for an age, is the best to retain in popular works, and that name is *Arabis alpina variegata*, or better, merely *Arabis variegata*. *Arabis lucida* is a more dwarf plant, and is of a different and closer habit, besides being very slow of growth, and difficult to keep even as an alpine plant in pots and in cold frames in winter. From what is here brought to light, I have altered my opinion of the value of discussing all the known kinds of variegated plants in one lump, as was lately proposed by one of our correspondents; then if any one of them which is in use within our influence is omitted, some one will be sure to step in and let us hear of it.

I recollect when the Variegated Mint was first brought before us by the same clergyman who first mentioned the Variegated Arabis, that soon afterwards lots of it were sent to the Experimental Garden from Trentham, and from Shrubland Park, and at that time the borders of the Experimental were full of it. So that it must have been then getting fast into use; but a hitch in the name, or whether it was a Balm or a Mint, caused a stoppage in circulating it, through the press.

Mr. Robson will be pleased to hear that his mode of giving life in winter to his great oval flower-bed is to be adopted by Mr. Nesfield, the great designer of terrace-gardening at the new garden for the Royal Horticultural Society at Kensington Gore, where large compartments are set apart for coloured gravels, or such like. They say that that fashion is prevalent in Italy where the heat spoils their grass, and where flowers are not so profusely

in use as with us; but, like every other new movement, there will be a world of opinions for and against it when we come to read of the glories of Kensington Gore.

Of all the new plans that I have heard of since blowing heat into hothouses out of bakers' ovens was explained to me, I like that best with which Mr. Fish has begun the new year with—I mean his details of the actual weekly work done, or ordered to be done by himself; it is like the bird in the hand against one in the bush; he and I, and all of us, might beat the bush for calendars and weekly works, and yet miss the best points owing to some turn or change in the weather. It is twenty-three years past last autumn since Mr. Loudon suggested the very same thing to be done in the "Gardener's Magazine" by a rising writer of that period; but the said writer did not then embrace so many departments of gardening in his practice as would warrant him to try such depth in fresh water. Besides, there were more water-bailiffs at that time to take up an adventurer who missed his footing, or made a false step from the lawful track, and there was too much of the rough-ready style of gardening work, which was then thought not to be fit subjects for the public ear. But a great change to the better has taken place on the subject of our calling since then, and even I, who have been up to the elbows in much before now, will read with pleasure and interest all the details of what had to be done last week, and what was brewing for the next in a first-class garden. What, then, must be the advantage to all the rest who are on the watch, and wish to go in first-class training about everything they take in hand or mean to do in their own gardens? But the most curious turn in the subject is this coincidence: it was just in the midst of such another frost, and just twenty years since that the first weekly calendar for gardening was written in England, and by Sir Joseph Paxton.

Touching the loss of our fellow-labourer, I shall gladly give my vote and all my interest in favour of Mrs. Errington till she is elected a pensioner on the Gardener's Benevolent Institution, and I shall take it as a personal favour to receive proxies on her behalf. D. BEATON.

STOVE ORCHIDS.

(Continued from page 221.)

GROUPED LISTS OF SELECTED SPECIES.

In the following catalogue I have given the names of such species only as have either large, showy flowers, or flowers produced so numerous as to make a good display in the mass. In a botanical point of view, all Orchids, however small their flowers may be, are worthy of culture, but for general purposes or ornament, or for exhibition, the greater number of species are almost useless. Fortunately there are handsome-flowering species enough to fill any houses that may be devoted to them, especially if they are well grown into moderately-sized plants. I venture to say that there are not a dozen collections in all Britain that contain all the species in my selected list. I shall place them in groups according to the modes of culture they require.

1. STOVE ORCHIDS THAT SHOULD BE GROWN IN POTS in a compost of fibry peat, sphagnum moss chopped fine and sifted, the dust thrown away, and the whole mixed with small pieces of charcoal.

| | |
|--------------------------------|------------------------------|
| <i>Ærides affine</i> | <i>Brassia caudata</i> |
| roseum | maculata |
| crispum | verucosa |
| Fieldingii | Wrayii |
| Larperetæ | <i>Burlingtonia fragrans</i> |
| maculosum | venusta |
| odoratum | <i>Catasetum atratum</i> |
| purpuratum | callosum |
| quinquevulnerum | citrinum |
| Schæderii | cristatum |
| suavisimum | laminatum |
| virens major | Russellianum |
| <i>Angraecum eburneum</i> | <i>Cattleya Aclandiae</i> |
| caudatum | amethystina |
| <i>Anguloa Clowesiana</i> | bicolor |
| uniflora | candida |
| <i>Ansellia africana</i> | crispa |
| <i>Bulbophyllum Henshallii</i> | superba |
| Lobbii | elegans |

| | |
|------------------------------------|----------------------------------|
| <i>Cattleya granulosa</i> | <i>Huntleya violacea</i> |
| Harrisoniae (new) | <i>Leptotes bicolor</i> |
| guttata | <i>Lælia acuminata</i> |
| Harrisonii | albida |
| intermedia | anceps |
| labiata | autumnalis |
| lobata | Brysonia |
| Leopoldii | cinnabarina |
| Loddigesii | flava |
| maxima | Perrinii |
| Mossiae | purpurata |
| superba | <i>Lycaste aromatica</i> |
| Pinelliana | cruenta |
| Regnellii (new) | Skinneri |
| Russelliana | <i>Maxillaria tenuifolia</i> |
| Schilleriana concolor (new) | <i>Miltonia atro-rubens</i> |
| Skinneri | bicolor |
| <i>Cœlogyne cristata</i> | candida |
| fuliginosa | Clowesiana |
| Gardneriana | Morelliana |
| speciosa | spectabilis |
| <i>Cymbidium aloifolium</i> | <i>Odontoglossum Cervantesii</i> |
| eburneum | citroszum |
| giganteum | grande |
| pendulum | hastilabium |
| <i>Cynoches chlorochilum</i> | Insleayi |
| Loddigesii leucochilum | membranaceum |
| pentadactylon | Pescatorei |
| <i>Cyrtorchilum flavescentis</i> | pulchellum |
| hastatum | Rossii |
| maculatum | Warzewiczii |
| mystacinum | <i>Oncidium ampliatum major</i> |
| stellatum | Barkeri |
| <i>Dendrobium aduncum</i> | bicallosum |
| aggregatum | Cavendishianum |
| albosanguineum | divaricatum |
| Blandyanum | flexuosum |
| corulescens | lanceanum |
| calceolaria | leucochilum |
| chrysanthum | luridum guttatum |
| chrysotoxum | microchilum |
| clavatum | ornithorhynchum |
| Dalhousianum | papilio |
| densiflorum | major |
| roseum | phymatochilum |
| Falconerii | pubes |
| Farmerii | pulvinatum |
| fimbriatum | sphacelatum major |
| formosum | unguiculatum |
| Gibsonii | <i>Saccolabium ampullaceum</i> |
| moniliforme | Blumei |
| moschatum | majus |
| nobile | curvifolium |
| majus | guttatum |
| Paxtonii | miniaturum |
| sanguinolentum | retusum |
| secundum | <i>Schomburgkia crispata</i> |
| taurinum | marginata |
| transparens | tibicinis |
| triadenium | <i>Trichopilia coccinea</i> |
| Veitchianum | candida |
| Wallichianum | suavis |
| <i>Dendrochilum filifolium</i> | tortilis |
| <i>Epidendrum aurantiacum</i> | <i>Vanda Batemanniana</i> |
| cinnabarinum | cœrulea |
| Hamburii | cristata |
| macrochilum | gigantea |
| album | insignis |
| roseum | Roxburghii |
| phœniceum | cœrulea |
| Schomburgkii | suavis |
| vitellinum | tricolor |
| <i>Galeandra devoniana</i> | <i>Warrea tricolor</i> |
| <i>Grammatophyllum multiflorum</i> | <i>Zygopetalum cochleare</i> |
| tigrinum | crinitum |
| speciosum | Makayi |
| <i>Houlletia Brocklehurstiana</i> | maxillare |
| <i>Huntleya meleagris</i> | stenochilum |

2. STOVE ORCHIDS THAT THRIVE BEST IN BASKETS lined with moss, and filled with the same compost as described above for those in pots.

| | |
|-----------------------------|-----------------------------------|
| <i>Acineta Barkeri</i> | <i>Dendrobium Pierardii majus</i> |
| Humboldtii | pulchellum |
| <i>Barkeria elegans</i> | <i>Epidendrum rhizophorum</i> |
| Skinneri | <i>Gongora atro-purpurea</i> |
| spectabilis | bufonia |
| <i>Brassavola Digbyana</i> | maculata |
| glauca | tricolor |
| Perrinii | Icnischi |
| <i>Chysis aurea</i> | nigrita |
| bractescens | speciosa |
| lævis | truncata |
| Limminghii | <i>Stanhopea aurea</i> |
| <i>Coryanthes macrantha</i> | bucephalus |
| maculata | Devoniensis |
| <i>Cymbidium devonianum</i> | eburnea |
| pendulum | graveolens |
| <i>Dendrobium amœnum</i> | insignis |
| Cambridgeanum | Martiana |
| Devonianum | oculata |
| macranthum | quadricornis |
| macrophyllum | sacata |
| onosmum | tigrina |
| Pierardi | Wardii |

3. STOVE ORCHIDS THAT THRIVE BEST ON BLOCKS OF WOOD, with a little moss tied over the roots.

| | |
|----------------------|--------------------|
| Aganisia pulchella | Oncidium bifolium |
| Barkeria Skinneri | Forbesii |
| Broughtonia coccinea | Inseleanum |
| Compactia coccinea | pectorale |
| Cattleya citrina | pulchellum |
| marginata | tricolor |
| pumila | triquetrum |
| superba | Sophranitis cernua |
| Lælia acuminata | grandiflora |
| majalis | pteroearpa |
| Oncidium crispum | violacea |
| ciliatum | |

4. STOVE ORCHIDS THAT THRIVE BEST ON LOGS OF WOOD half buried in moss in pots.

| | |
|----------------------|--------------------|
| Phalenopsis amabilis | Scuticaria Steelii |
| grandiflora | |

5. STOVE ORCHIDS THAT REQUIRE TO BE KEPT UNDER BELL-GLASSES, and to be grown in moss, sand, fibry peat, and leaf mould.

| | |
|-----------------------|------------------------|
| Anacochilus argenteus | Anacochilus Roxburghii |
| pictus | setaceus |
| El Dorado | cordatus |
| Lobbii | intermedius |
| Lowii | striatus |
| virescens | Veitchii |

6. STOVE ORCHIDS, TERRESTRIAL SPECIES, requiring a compost of fibry loam, sandy fibrous peat, leaf mould, and caked cowdung in equal parts, with a liberal addition of silver sand.

| | |
|------------------------|--------------------|
| Bletia Guineensis | Cypripedium Lowii |
| Parkinsonii | purpuratum |
| Shepherdii | venustum |
| verecunda | villosum |
| Calanthe curculigoides | Peristeria elata |
| Masuca | Phaius albus |
| vestita aurea | grandiflorus |
| sanguinea | maculatus |
| veratrifolia | Wallichii |
| Cypripedium barbatum | Pleione humilis |
| majus | maculata |
| caudatum | lagenaria |
| Fairrieanum | Wallichiana |
| hirsutissimum | Uropedium Lindenii |
| insignis | |

(To be continued.)

T. APPLEBY.

HEATING BY A FLUE.

WERE I to substitute a *raised flue* for the two four-inch pipes, recommended by you at page 192 to be carried under a bed round three sides of a propagating-pit, should I get sufficient top and bottom heat (the top by means of slides as suggested) for forcing Cucumbers as early as January? I should, I suppose, have sufficient heat by having a large-enough flue, but would it be a wholesome heat? and what size should the flue be? The house has yet to be built, and I propose to have it 12 feet by 8 feet; height of back wall 8 feet; the roof at an angle of 45°. Of course the height of front wall will be according to the angle fixed on. The house to face due south; the door to be at the west end, and the stovehole, &c., at the back, as near the north-west corner as possible.—P.

[See answers to "E. H." and "J. B.," in addition to "DORSET SUBSCRIBER." In referring to previous statements, correspondents would much oblige in stating the page, &c. We endeavour so to place ourselves in the position of our correspondents at the time as to do the best we can for them; but our memory is not retentive enough to recollect much about it after it passes from our hands. We knew we said something lately to a "DORSET SUBSCRIBER," but it took us fifteen or twenty minutes to find the place. Singular, no doubt; but so it was. In a hurry, and to prevent inquirers waiting, we may refer to a late or a previous Number; but in this respect, if it be a fault with us—and we do not pretend that it is not one—we have no desire that our friends should imitate us. Now, to our correspondent "P." In such a sized house, but then with roof much flatter than 45°, we have grown Cucumbers successfully after January without any bottom heat at all, properly speaking, for the main crop. The flue was 9 inches wide inside measure, and 18 inches deep, and for 15 feet from the furnace was built brick on bed. The house in winter was used for various purposes with a heat averaging 50°. On the 1st of January it was raised to 60°; and a box with a sparred bottom, and 18 inches deep and 2 feet wide, filled with leaves and tan, was set on the flue at the warmest end, but separated from it by the thickness of thin bricks. In these boxes the

Cucumbers were sown, and covered with a hand-light. When potted off another box was prepared for them, and when the plants filled a four-inch pot with roots they were planted into similar boxes all along the flue, with the exception of 9 inches between each, which was occupied by an evaporating-jar filled with water. We have never had better Cucumbers, and with one or two striking exceptions we have never seen the produce surpassed. In another house with an old flue, and built brick on edge, we were equally successful; but twice at least we lost our plants by an explosion of gas in the flue: hence flues are not so safe as hot-water pipes; though when brick on bed, and kept clean, we have never experienced any disaster. We would advise all friends, however, to avoid sprinkling the flue; most cases of scorching arise from that habit.

Our friend, however, may dislike this bother with boxes, &c., and, therefore, would rather have bottom heat from his flue at once. Now if his house had been 40 feet or 50 feet in length we should have advised a return-flue, as alluded to by another correspondent to-day, taking it along the back; or, for winter work, we should have preferred the flue going along the front in an eight-feet-wide house, but free from the front wall, and returning, leaving a foot or so between them. The front flue we should supply with evaporating-basins, and build it brick on bed. The return-flue we should surround with clinkers, cover with rough gravel, and then, as a correspondent proposes, cover with rough mortar or concrete as the bottom of our bed. Under such circumstances no gases could escape if there was such a thing as an explosion. Three or four feet wide would do for this bed. This return-flue might be brick on edge, and should be so to equalise the bottom and top heat. We mention this to suit another inquirer, who does not even wish his initials to be given, but who will find what he wants under "Cucumbers." Now, in our correspondent's case, with a house merely 12 feet long, we think his proposed plan will answer. The flue should be 9 inches wide inside measure and 18 inches deep, covered with a stout tile, and for half the length at least built brick on bed. The cheapest chamber would be stones, clinkers, bats, covered with concrete. Pipes should be inserted to make sure that the soil was moist close to the concrete. A couple of slides might be left to let out more top heat when wanted; but as the width is 8 feet, and 4 feet of bed would be wide enough, or even 3½ feet, there would be 4 feet or 4½ feet of open flue at each end, which, for such a short house, ought to give, unless in severe weather, top heat enough. These ends might be covered with evaporating-basins. We are calculating that the back wall is as now. Even with the front wall pretty close to the ground you would have to raise the back wall 4 feet more to get an angle of roof of 45°; but for the time you specify the somewhat flatter roof will do very well. A roof of 45°, or even steeper, however, is rather desirable for Cucumbers when a house is appropriated to them.]

INARCHING OF OLD VINES—PINE APPLE LEAVES DISFIGURED.

I HAVE some old Vines between thirty and forty years old under my care, which I understand are from the Vines at Hampton Court (Black). Upon entering my situation here I found them in a deplorable condition; and it being then too late to use the knife, I had to let them alone until the present time. I have made use of the knife now very freely, for this reason:—the system adopted here previous to my taking charge was that of bringing up four rods the full length of the rafters, which are 18 feet in length, and tying them together like a bundle of sticks and spurred in. The fruit was miserably small.

Not liking such a system, and the rods being indifferent, I asked permission to take them up, make a new border, and plant fresh Vines; but my employer said they were planted by his father and he would not have them disturbed.

Now, the Vines are allowed to extend their roots as far as they please, which I should say will be sixty or eighty feet from home. Soil good, resting upon a limestone bottom.

What I have done so far is this. I have cut away all rods but one to each rafter, leaving the youngest and strongest. I thought of inarching them, being a late vinery, with the Trentham Black, Black Prince, and Golden Hamburgh. Should I be right in so doing? The Vines commence their growth about the latter end of April, at which time I thought of doing what I have before stated.

I have a quantity of Pines here, and observing what I have never seen before except by scalding, which is not the case at this season. Many of the points of their leaves are brown: the first appearance is that they look as if they had been dipped in hot water, and afterwards become withered. I have some fine plants planted out over a hot-water tank, and some in pots plunged in a bark-bed, both of which have the same appearance. Both places are heated by smoke-flue; but I have a sufficient amount of moisture kept up by damping the pathways. The only conclusion I can come to is, that it is either caused by bruising the foliage or using Gishurst Compound too strong. I have had Pines under my charge before, and have seen a great many, but have never seen the like before.—
A SUBSCRIBER.

[We think if the roots are in a good condition that the sequel will prove that the master was quite right. Under such circumstances it is best to allow those circumstances to regulate our conduct, and that will be better than acting on a pet system. We would have thinned the Vine-roses gradually, and in the ensuing season would have selected wood to replace what we had taken away, so as to renew the Vines without any loss of crop. We suppose you propose inarching the Vines cut down; but if they merely start in April you will not be able to do so on their young wood until the middle of June, or the beginning at the soonest. You might graft, however, in March, and, if any failed, try inarching afterwards.]

The Pine leaves will never recover from a bruise; but in your case we should expect either that there was a discharge from the flue which nipped the tenderest part, or that the cold had been too much for them during one of the recent cold nights.]

HINTS TO GARDENERS.

In the following remarks I trust the warnings included therein will be taken by my brethren in the spirit they are written in—that of a true regard to their interest and welfare. I am now a man well stricken in years, and have seen during more than half a century of experience, mistakes of various kinds made by gardeners; mistakes that have brought many a once respectable man to poverty and degradation.

I deplore as much as any man the inadequate rewards that too many of my fellow gardeners have to endure, and I do think that no small blame is due to employers for giving low wages to men who have devoted, perhaps, ten or twelve years to learning their business. To a mind not rightly constituted, and conscious of being underpaid, the temptation to make the most of his place is great: hence he is always ready to accept gifts, and must give something in return, either in the shape of cuttings, plants, or even fruits. Another way to eke out his wages, is to take young men and a premium with them. I do not say this is absolutely wrong, but one bad consequence is, that he must keep the young man whether worthy or not, for a time at least, in order to have a decent pretext to keep the premium. Then, again, in order to increase the number of premiums he recommends his young men to situations before they are fit for them, and by so doing throws more hands into the market than there is a demand for, thus causing a continuance of low-wages men. This is a great mistake. That there are a great number of gardeners out of situation at the present moment is a fact, in proof of which I need only refer to the great number of gardeners advertising for places, and the very few that are advertised for as wanted. I know an instance very lately which proves this melancholy fact still more. A respectable nurseryman advertised for a gardener for one of his customers, and he assured me that he had received no less than one hundred and eighty applications. Now, only one could have the situation, consequently one hundred and seventy-nine are yet out of place. Let every gardener that reads this fact remember that if he loses his place there are hundreds ready to jump at it, however poor it may be, and once out of a situation he cannot tell how long he may be before he obtains another.

Now, how is the sad state of things in regard to my suffering brethren to be ameliorated? It is a very grave question. There are three methods that, if systematically followed throughout the kingdom, would in some degree amend the condition of gardeners—namely, by training up fewer young men to the profession; by such as can afford it emigrating to a country where they are wanted; and by turning to some other business. The first

remedy is, in my opinion, the most important. It is well-known to economists that the price of anything is regulated by the supply and the demand. If Wheat is scarce the price instantly rises; and so it is with both skilled and unskilled labour. If gardeners were less numerous they would be better paid: hence, let the head gardener take fewer young men as apprentices to train up to be head gardeners, and employ instead more labourers, and then very soon the value of gardeners would be raised.

There has been great talk about educating gardeners, and I think it very desirable that young men who are learning the business should improve their minds by study, and learn all they can that may make them better men and better gardeners; but that alone would not increase their salaries if too great a number are brought up to the business. Places do not increase so fast as to need a greater supply of head gardeners: hence the supply is greater than the demand, and a lower price is of necessity the consequence. In my young days it was not so. If a good gardener by the death of his employer was thrown out of a situation, he had only to state the fact to a respectable nurseryman that knew him, and directly he had the offer of two, or three, or more places to choose from. Now, if an equally respectable man loses, though from no fault of his own, his place, he may go into even a London nursery, and may possibly stop one, two, or even three years before a place may occur to suit him. But if he has a family depending upon his wages for bread, he will be tempted, and it is often too truly the case, to accept a place at all hazards, at even lower wages. Such a man becomes unhappy in his poor place, and in many cases it ruins him.

This should not be so. Many employers object to engage a gardener with a family. I think this is wrong. A man with a number of mouths to fill is the more likely to strive to do his duty in order to please his employer and render himself of greater value. I do hope this objection to engage a worthy man because of his family will be done away with; he is the very man that most needs a good place. All this proves my first remedy to be necessary in these days—namely, training up fewer young men to the business.

My second remedy to correct this growing evil, is emigration. Young, healthy men in the prime of life who are not afraid of work, should emigrate. I know no country where a gardener up to his trade can do so well as in Canada. I once had a clever fellow of that character under me. He was married. I got him a pretty fair place, and he stayed in it till he had saved a little money. His children and wife and himself made a family of seven persons. His cash just cleared him out to Canada. He had a good bold heart, and went out well recommended, but totally unengaged. He arrived at Montreal in April, just as the winter was passing away, and immediately obtained work at fair wages in a market garden. A gentleman that lived near observed this young man and his mode of doing his business. He offered him higher wages to enter into his employment as head gardener. The young man accepted his offer, and the gentleman placed his garden entirely in his hands. This young man laid it out anew, put up more glass, and so improved the place that his wages were advanced again, and he is now reaping the reward of his labour and the spirit he displayed in emigrating. I give this instance of success because I know it to be true. He writes that any good gardener may do quite as well, and that the demand for them is great. Another instance has come under my knowledge. A young man—my foreman, in fact, went out some fifteen years ago to the United States. He obtained a place immediately, and, being careful, he saved money and laid it out in land. He is now an extensive market gardener near Philadelphia.

Here, then, are two countries where there is room for our surplus stock of gardeners. Let more go out and they will not only benefit themselves but their brethren that they leave behind them. I would not advise a man to go out to a newly-settled country like New Zealand, for instance, expecting to obtain employment as a gardener. There he must become a farmer or a farmer's assistant, for gardening is yet in its infancy. I have no doubt he would find employment in the more settled parts of Australia. That country within a few years has made rapid strides, and is now in many places well peopled, and wherever there is a large population there the produce of the garden will be in request, and there men that are gardeners indeed will meet with situations.—T. APPLEBY.

(To be continued.)

SMALL FORCING-PIT.

I HAVE 15 feet long by 6 feet wide of pit-lights that I wish to rebuild in a small forcing-pit for raising Cucumbers, to be heated with flues built brick on bed; the flue to be 1 foot from the front wall, to turn and come back 1 foot 6 inches from the back wall, and rising 4 inches gradually the whole way. Round and over the flues to be covered with brickbats with a layer of gravel, on that to be placed a layer of mortar to within six inches of the front wall. Between that and the wall I think of carrying a pipe pierced with small holes communicating with a flower-pot to supply moisture. Would air-drains be of any service in the front wall to warm the air as it rises? Would you tell me the lowest height the pit and flue may be, and whether the proposed plan will do?—E. H.

[Like some other correspondents, you say nothing of height. We presume your front flue is for bottom heat, and the back flue for top heat. If so, we say, Go on. If not, you must have openings to let up top heat at pleasure. The flues must be well built and brick on bed, if you admit heat from the covered-in part into the air of the house. The back flue would be as well to be the same; but brick on edge would do if you did not water it. The plan of moistening the rubble is good, but the water should not go on the flue. The air-openings will be useful in early spring; but even then a slight opening at the top must not be neglected in bright sun. The bottom of your pit should be 30 inches to 36 inches from the glass, which will give you from 15 inches to 18 inches for soil.]

TURNING A GREENHOUSE-VINERY INTO A STOVE.

WE regret that the inquiry of "A YOUNG SUBSCRIBER," was made too late to permit an answer being given in the Part for December. Unless in extraordinary cases, correspondents should not delay writing, and then make the request for an answer to be given in the next Number, as most likely that Number may be nearly in type before their inquiry arrives, and many inquiries seemingly simple require much consideration before a proper answer can be given. We should regret the delay the more in the case of our mechanic correspondent, were it not that the state of the weather must have prevented him doing much, whatever alterations he may have contemplated.

The first thing that strikes us is, that there is force in the old proverb, "Let well alone." Such a nice collection of flowering plants, and a crop of Grapes from a small house, is highly creditable to any mechanic, and many would be perfectly satisfied with it. As economy is an object, it is right to state, that in an average of seasons, a plant-stove will take three or four times the amount of fuel that a common greenhouse would do, though the labour of general attendance otherwise will, if anything, be lessened rather than increased.

The second thing is, that three lines showing a section of the house and the position of the flue would have given a better idea of the circumstances than merely stating that the house is small, low-roofed, and heated by a flue on three sides, so as to command any desirable amount of temperature. For instance: Supposing the flue now enters at one end, goes along the front, and crosses at the other end, it might be possible to shut in one end so as to give bottom heat there if required; or the flue might be returned along the back of the house, and a bed made over it where a foot or fifteen inches of tan would be very useful for stove plants at certain periods, though with plenty of moist heat the plants referred to will do admirably without bottom heat at all. A good strong flue in a small place is just as good for bottom heat as pipes or tanks covered. The heat, of course, will be dry, but it is an easy matter to make it moist enough by pouring water on stones near the flue, and not on the flue itself.

Our correspondent will see that Mr. Allen has redeemed his promise; and for small places we have no doubt the little boiler will answer well, and it will be a little cheaper than the smallest conical and retort boilers, and will need less setting—in fact, in some cases might do without any setting at all, though heat would be lost. For such a house an amateur some time ago placed a common metal kettle that he bought for a few shillings over the flue, after drilling a hole near the bottom for fastening a one-inch iron pipe, and one near the top for a similar purpose, both leading into a wood tank two feet wide and four inches deep, and divided in the middle, except at the extreme end, and

covered with house-slate. The kettle had a wooden bed bedded with red lead, for the tank was no higher, except by an inch or so, than the flow-pipes. If the kettle had been from one to three feet or more below the level of the tank, the top would have required to have been iron and securely fixed all round. In a similar case, both holes were made in the lid, the flow-pipe going an inch inside, and the return going down within two inches of the bottom of the boiler; but that did not act so well. It is always advisable for a quick circulation to keep the return-pipe cool. Such a kettle would do also by means of an open pipe for diffusing moist warm vapour in a bed of stones, clinkers, &c.

In answering a correspondent recently, "A NEW SUBSCRIBER" would see a mode by which his Vines could be protected during winter, and gradually brought forward before introducing them to the house. The modes of doing this may be greatly modified according to the object aimed at. In that case it was desirable to make a forcing and propagating-house in winter and spring, and yet not interfere with a fine crop of autumn Grapes. Our correspondent could do the same by having a temporary double front to his house, between which to keep the Vines and forward them a little before introducing the stems into the house. That time may be varied according to the time he wishes the Grapes to be ripe. However he may determine, the Grapes should not be looked upon as a keeping crop, but one to be used as soon as ripe. Economy kept in view, we should prefer the Grapes to be tolerably early—say, the end of June or beginning of July; because if disposed to sell them, the value of the Grapes would be double or treble what it would be in September, and would return something for the fuel used. In the first season there could be no difficulty in raising the temperature gradually in January, and protecting and warming the roots at the same time. If the roots are very deep, the Vines will not force so well.

Now, in the second year, this is how we would proceed. We will suppose all the Grapes cut by the end of August; then give the Vines all the heat and light possible in September—at least for the first part of it, and keep the roots rather dry to harden the wood. Then, supposing you have no double front to your house, take the Vines out of doors and fasten them to stakes, letting them have all the sun possible. By the middle of October prune them and wash them, and protect from frost. By the middle of November protect the border with fermenting litter, and the Vines in mats may be laid on it. The weather will now be getting dull, and the front of the house may be reduced to 50° for a fortnight, the rest of the house kept from 5° to 10° warmer. Along the front of the house the Vines may be fastened longitudinally by the middle or end of November, or the same time in December, only giving them a temperature of about 50° where they are placed for the first three weeks, and then raising it gradually to 60° as they break. That may be the medium temperature afterwards, and on to 65° when they are in bloom, and the increase in temperature will take place some time after the change of the day, and when a lengthened sun will permit of a higher temperature to the plants you cultivate. A month or so after the fruit was cut, the Vines would require to be again removed.

The times of lighting fires, and giving over fires, must, therefore, depend on circumstances and on the weather. Such plants as you allude to will not long flourish in a lower temperature than 55° at night in winter, with a rise of 5° during the day if cloudy, and 10° to 20° in sunshine. In starting Vines in such a house, by keeping the front cool—say to 50°, by air and moisture for a fortnight, and then raising gradually to 60°, the Vines may be broken safely. If this is not done until Christmas the sun will have gained considerable force by the time the Vines are in bloom; and the increase of temperature from 60° to 65° and 70°, will answer plants and Vines alike. After the Grapes are set 65° will be high enough for them at night, and so will it be for the plants. There may with propriety be a rise of from 10° to 20° with sun heat, provided a little air is given early. These indices are of more importance than telling when to discontinue firing. A fire may be more needed in July than in April, and the practice must correspond. It will be of importance in autumn to diminish moisture in the atmosphere and increase the light and heat from the sun to thoroughly harden the wood; and that secured, the plants will stand uninjured a lower temperature in the first dark months of winter than they would do if more soft and spongy.

If neither this mode, nor the one recommended for an early late crop suited you, then we would advise keeping the Vines out, protected with calico, until the Vines began to break in

April, and then introduce them for a late crop. The having them early, by introducing about Christmas or the new year, we consider would pay best if the roots are all right. In each case, the power of placing the Vines between two fronts of the house would be the best if it can be done.

These matters disposed of, there will be no difficulty in cultivating such stove plants as you name.

The following we think would suit your purpose. For winter blooming:—*Ardisia crenulata*, *Begonia fuchsoides*, *Epiphyllum truncatum* and varieties, *Euphorbia jacquiniæflora*, *Justicia flavicoma* and *speciosa*, *Poinsettia pulcherrima*. For spring:—*Allamanda neriifolia*, *Centradenia rosea*, *Goldfussia anisophylla*, *Eranthemum pulchellum*, *Franciscea* of sorts, *Begonia manicata*, &c. For summer:—*Begonias* *Ingramii*, *Prestoniensis*, *cinnabarina*, *nitida*, &c., for blooming; and such kinds as *Rex*, *Marshallii*, *maculata*, *argentea*, &c., for fine foliage. Also *Caladiums* for the same purpose; *Cissus discolor* and *Coleus Blumei* also for foliage; *Stephanotis floribunda* and *Ixoras* such as you like best, as the culture is very similar. We would say *Allamanda cathartica*, only you might not have room. For autumn, in addition to the above:—*Hoyas*, such as *Paxtonii*; *Passifloras* *Buonapartea* and *princeps*, *Achimenes*, *Gloxinias*, and *Gesnera zebrina*, &c.

The *Ardisia* is just like a pretty Holly bush, always supplied with red berries, only there are no spines on the leaves. Grow in loam and heath soil. Temperature from November to March from 50° to 60°; after that it will take all the summer heat with a due amount of air.

Begonia fuchsoides.—Strike a young plant, or get one as soon as you can in the spring. Grow on as fast as possible in summer, shifting into larger pots as often as necessary until August, giving a high summer temperature with a moist atmosphere until then; but by the middle of August give all the light possible, and by the middle of September curtail water so that the plant does not flag, and in November the flower-buds will show and open in a temperature averaging 55° at night and the air not very moist.

Epiphyllums are the jointed Cactuses. They generally bloom in November. After blooming keep them in the coolest part of the stove, and give just what water they need and no more. In spring and summer give all the sun possible. After August they might stand in front of a wall out of doors, and the rains thrown past them, and housed by the end of September. Water may then be gradually given. They grow well in a mixture of equal parts sandy loam, very old dry manure, and lime rubbish.

The *Euphorbia* delights in lime rubbish, and sandy loam, and heath soil. Grow as freely as possible in spring and summer, harden the shoots by sunlight in autumn, and lessen watering. When the buds show on the young shoots, give more water and a temperature averaging 60°. It will often bloom a long time. When done blooming, and rested and rather dry for a fortnight, prune back the plant when large, or bend the shoots to make them break; and as soon as the buds break increase the temperature and atmospheric moisture, and water at the roots.

Justicia flavicoma will bloom almost all the winter, and makes a house gay with its bright yellow flowers. It is of simple culture, growing freely in sandy loam and peat. When done flowering prune back the plant pretty freely, as the flowers come on the wood of the previous summer's growth. This will do as low as from 50° to 55°.

Poinsettia pulcherrima.—Like the *Euphorbia* above, this never makes a very bushy plant. The large crimson bracts at the end of the shoots, terminated by the not-striking flowers above them, are the great attraction. Loam and a little heath soil suit them well. Give water when in bloom and showing bloom. When done flowering set them in a cool end of the house, averaging from 50° to 55°, or even less. Let the plants become pretty dry, then prune them back to within a couple or three buds of the base of the shoots, and in a few days give a little water. In a week more place the plants in a warmer part of the house, and where they will be fully exposed to light. When the shoots break, if when six inches long some are much stronger than others, the strongest may be nipped, which will cause it to come double or triple and about the same strength as the weaker ones. After April the shoots should not be stopped. They will do anywhere under glass with plenty of light after July. In September they should have all the sun possible: in October be placed in the stove, have all the light possible, and be kept a little dryish until the flower-buds begin to show

at the points of the shoots, when more heat and moisture will be necessary.

Allamanda neriifolia is a shrub-like plant, in flower most of the summer, blooming on the young wood of the current year. Prune back freely when done flowering, and get shoots growing slowly all the autumn and winter. Peat and loam will do well for it. The climbing *Allamandas*, *cathartica*, &c., like a little bottom heat when making their growth.

Centradenia rosea will be smothered with bloom on all the young twigs. Prune a little when done flowering. Grow in loam and heath soil, and give all the light possible in the autumn. Keeping it rather dryish in the first part of winter will cause it to bloom freely in spring.

Goldfussia anisophylla, a pretty bushy plant, with lavender-coloured flowers produced freely on the young shoots made in summer and well exposed in autumn. When done flowering it may be cut back to within a few buds of the base of the shoots.

Eranthemum pulchellum and *verrucosum*, small, bright, blue flowers. Treat as above, only it is rather more tender.

Franciscea.—All the tribe will live, after the plants are established, in a temperature of 45° in winter: so, we presume, your greenhouse has not been much below that. At that temperature, however, they become almost deciduous. In 10° more heat they keep their foliage as sub-evergreens. In the cooler temperature they bloom chiefly in spring and summer on short stumpy shoots. In a stove temperature in winter, and proportionately high in summer, uniflora and others bloom on long slender shoots and pretty well all the year round. Few things are sweeter scented. In a cool temperature in winter the plants should be kept dryish.

Begonias.—Heat given, these are as easily grown as a Scarlet Geranium. From 50° to 60° will suit them all in winter. Sandy loam and a little heath soil and leaf mould grow them well; and though little water is wanted in winter when the sorts bloom in summer, they want plenty of water when growing and blooming. All the fine-leaved kinds in the way of *Rex* flourish best in a high moist temperature in summer, and shaded from strong direct sun. The same rule applies to *Cissus discolor*. On the other hand, when established *Coleus Blumei* looks best when fully exposed to a summer sun.

Ixoras coccinea, *fulgens*, *Griffithii*, *odorata*, *rosea*, *obovata*.—These require to be well drained, to be grown in fibry peat, fibry loam, with a good handful of silver sand, and the same of small nodules of charcoal, to as much compost as would fill a pot of six inches in diameter. These plants are liable to various diseases, and especially insects—as thrips and bug; and require much sponging and a close moist heat when growing and showing bloom to keep such nuisances at bay. At such times they also thrive in a sweet bottom heat of from 80° to 90°. Your outline of culture may be as follows:—If you purchase small plants, it is not likely that you will do anything with blooming them until the second year. The first season, therefore, should be devoted to get as many shoots on a plant nearly equal in size as possible. With a little air given early you can hardly give them too much heat and moisture in the atmosphere, especially in sunny weather, all the spring and summer, and a little bottom heat all that time will do them good. In winter the bottom heat is of little consequence. The plants should be drier, and the temperature may range from 55° to 60°. The plants should be placed pretty close to the glass, so that light and fresh air may circulate round the plants. This treatment arrests mere elongation of shoots and causes the flower-buds to form; and then a strong heat of from 65° to 70° at night, and from 75° to 90° during the day, brings the blooms to fine size. At that period again, when the buds are started, a sweet bottom heat seems to be enjoyed. When the plants have done flowering and have been trimmed a little, every encouragement should be given to growth until towards the end of autumn, when the water should be lessened and the cooler and airier rest of winter given. The plants will do without this bottom heat, but they are easier managed with it.

Rondeletia speciosa major.—This beautiful plant is more easily managed. When done flowering it is as well to prune it in pretty freely, and grow it in a good moist heat, and rest it by comparative dryness and a temperature averaging 55° in winter. It will bloom profusely on the points of the shoots. It should be grown in fibry loam and heath mould.

Stephanotis floribunda.—This queen of flowers will take as high a temperature as you can well give it in summer, except when in bloom, when from 50° to 60° at night will keep it longer

in bloom. In winter it will not keep healthy if lower than from 50° to 55°. If often much above 60°, and watered in proportion, it will not bloom so freely the following season. Such a plant when transferred to a large pot, or a wooden-box—say fifteen inches square, would do well in such a house run along a wire where it could have plenty of sun. We presume you mean to grow it in a pot; and for a small house, a pot ten or twelve inches in diameter will grow a nice little plant. Unless you buy a good-sized plant in a six-inch pot at once, you must wait for a year or two to have a good flowering specimen. Growing, therefore, must be your object this ensuing season, and training either flat or round, according to your fancy, taking care that the shoots are so thin that the sun can beat freely on the leaves. Loam, heath soil, and leaf mould will grow it in perfection. Whilst all possible sun is given in autumn, water must be gradually lessened, and the temperature and water decreased all the winter. From every bud on the well-grown and well-ripened wood of the ensuing summer and autumn, you may expect a cluster of flower-buds to come the next spring and summer, when the higher temperature is applied and the sun also gains in power.

Passifloras.—*Buonaparte* and *princeps*, the first one of the most splendid blue-lilac ones, and the second a fine scarlet, the flowers hanging in clusters like bunches of Grapes. These would do nicely on rafters; but, also, would do well in pots grown in rich loam and heath mould, enriched with top dressings of rotten cowdung. The first season should be devoted to supplying the trellis with one or two strong shoots, and hardening them well in the autumn. Shorten these in spring, and, if old enough, the shoots that break from the buds will bloom freely. Afterwards these shoots may be cut into a bud or two next their base every winter or spring, as all the flowers are produced on wood of the current year, coming from well-ripened buds on the wood of the preceding year.

Calliphuria.—We are not sure if this is the genus you inquire about, but if it is, we may state it requires treatment similar to the Guernsey Lily or the common *Amaryllis*; and this leads us to remark, that a dozen or two of the *Amaryllis*, or rather of *Hippeastrums* would be useful in such a house, as a plant would be coming into bloom every now and then.

We will just add in conclusion, that we trust your flue is equal to the work required of it, and, if so, you may manage all these plants, though not so easily, without any other contrivance; but in the growing periods especially you will need to neutralise the dry heat of the flue, by keeping the atmosphere of the house moist. We should, in doing this, avoid the old practice of wetting the flue; but keep the top of it covered with evaporating-basins supplied with water, and in frosty weather in spring, and sunny days in summer, sprinkle the paths and floor in addition, and even the shelves and stages on which the plants are standing. In clear, warm weather this may be done several times in a day, and all the plants not in bloom may also be syringed freely once a-day, a little before the sun leaves the house. In all watering and syringing use soft water, and as warm at least as the heat of the house.—R. FISH.

ROOT-PRUNING UNDER FLAGSTONES.

I HAVE been much interested in the remarks of several of your correspondents on the subject of root-pruning, and concur in their opinion of the importance of that operation; but I have a case in which I cannot, without very great trouble and inconvenience, carry out the principle in practice.

In my stable-yard is a large Pear tree growing against the stable-wall and measuring, perhaps, 35 feet from end to end of its branches. It grows luxuriantly, but has no fruit, except, perhaps, a solitary Pear at the extremity of two or three of the branches. I believe it to be just a case for root-pruning, but there is my difficulty. The tree is closely surrounded by the flags and pavement of the yard, and many of the roots, probably, go underneath the stable; some, perhaps, penetrate the drain (thus accounting for the exceeding luxuriance of the growth), so that it would be scarcely possible to get at them with any prospect of benefiting the tree. I have thought of "scarifying" a portion of the bark, but my gardener objects to that plan without being able to suggest anything better.—A YORKSHIREMAN.

[The moving some flags three feet from the tree and cutting the roots would be the most effectual; but you can lessen growth greatly and thus get the sap more highly elaborated by the means you propose, or, better still, ringing the main stem, or

every main branch near the junction of the main stem—that is remove a circle of bark right down to the alburnum, of from one-sixteenth to one-eighth of an inch in width. That will pretty well meet the first year, and will give the necessary check most likely; and, if necessary, you can reopen the circle. Do not make the opening too large.]

DECORATION OF ROOMS WITH EVERGREENS.

THE intelligent contributor to THE COTTAGE GARDENER, at page 163, has called attention to a subject I have for some time intended to write a short article upon, as it is one of those occasional duties which the requirements of the advancing times sometimes devolve upon the gardener. Not the decoration of churches in particular, which may properly be left in the hands of those who have the superintendence of such matters, but the decoration of public rooms for balls, fêtes, or any other purpose that may be wanted, and now and then private rooms, or it may be a suite of rooms, in a private residence may be wanted for some special purpose, in which a tasteful decoration of evergreens adds considerably to the general effect. As such things are becoming daily more common, no apology is wanted for writing a few brief notes on the subject.

It very often happens that the decoration of public rooms for balls or other purposes is entrusted to the party who supplies the refreshments, and the materials for the purpose are sparing and often not appropriate, evergreens of suitable kinds being less plentiful in a town than around the residence of a country gentleman: consequently flags and other devices have to be resorted to to fill up the space. Certainly, a judicious mixture of the latter with evergreens in a large room is not only excusable but recommendable—at the same time let them always represent a flag, the drapery being perfectly free except where fastened to the staff. Nothing looks worse than a flag fastened at all its corners. The staff, however, may slope to any angle that may be wanted to show the flag, but ought never to be more depressed than to an angle of 45°, excepting where a number of flags form a cluster or fan, which looks very well over a window or doorway, or to form a centre piece in a wall, in which case the lowest flags may be at a lower angle than above indicated. A wreath of evergreens may conceal the point from which the flagstaffs radiate, but a portion of the staff ought to be seen.

Of evergreens suitable for decorating a large room, certainly the best as well as the most common is the Laurel, which, apart from the poetic feeling hanging over its name, is certainly the most graceful shrub we have. Whoever has walked through a shrubbery by moonlight must have been struck by the beautiful shadows a sprig of Laurel throws on the ground; and in like manner it does the same on the walls of a room, which are usually of a pale colour; and, the boughs of this shrub being flat, each leaf is distinctly visible with its proper side to the beholder. In large rooms, therefore, nothing is better than the Laurel. If the room be without architectural embellishments in its cornice a broad band of nicely selected Laurel boughs might be carried all round with good effect, the boughs overlying each other so as to hide the cut end, but one bough in thickness is sufficient; but if there be an ornamental moulding and other enrichments too good to be concealed, then some portions of the plain wall may receive these Laurels, which, however, ought to be in smaller portions, and nailed securely to a small piece of board about a foot or so each way, the cut ends all meeting in a fan form at this board; and a few small twigs stuck in at last will conceal a sort of flat whorl of evergreen of a size proportioned to the panel it is to be placed against. If nails or other fastenings be forbidden, which very properly they ought, a string of the same colour as the wall, and suspended from some place in the cornice where a nail can be inserted, will answer the purpose of suspending it; and its front may be ornamented with rosettes if thought necessary, pink and white distinct and not mixed being the only colours wanted amongst evergreens. A partial screenwork of Laurel might also run down a corner or by the side of a projection (if the latter be large), or in any of those ways which only an inspection of the building can point out. But in all these cases let the tips point downwards; for though the footstalk of the Laurel leaf is stronger than many others, it may flag before the fête is over, and then looks ungraceful. It is also proper here to observe, that during the growing season

the top ends of Laurels render them not adapted for decoration: if, therefore, something be wanted, a deciduous tree—as the sweet Chestnut, Beech, or something that way, may be used instead.

The above remarks apply principally to large rooms or buildings; but it often happens that the ordinary rooms of a private mansion have to be decorated for some special purpose. Where the proportions of these are not more than 20 feet each way and of a moderate height, the mode of decoration must be different, and art and labour are brought more into bearing here. The large boughs of Laurel and other shrubs must be discarded for something smaller; and this also is to be compelled to take an artificial form, either in the shape of wreath, festoon, or scrollwork, festoon being in a general way the most appropriate. One of the best evergreens we have for this work is the Ivy—not the long rampant shoots which cling to a wall, but the short stubby tufts which project from some old-established plant that has not been disturbed for many years. Small twigs of this not more than ten inches long fastened to a dark-coloured string, and some little care taken to make it of a uniform thickness of about eight inches or so in diameter from outside to outside, and the leaves all pointing one way. Strings or ropes of this hang up with facility anywhere, and they may be made to stretch across a room by being hung to the lamp-hook, if there be no danger of their burning. No evergreen that I am acquainted with is so well adapted as the Ivy for this purpose, the under side of the leaf looking better than that of anything else of a like kind; and it is impossible, when the festoon has to be viewed on all sides, to always have outside leaves to look at. The glossy greenness of the outer side of its leaves is equalled only by that of the Portugal Laurel, which, however, sooner flags; and, the under side of its foliage not looking so well, is not so well adapted for the purpose mentioned. The berries of the Ivy are also an attraction when they are good; and to make them more so we have occasionally dipped them in a mixture of plaster of Paris, which gives them a snowy whiteness and does not easily come off. When the quantity of such festooning wanted is very great (perhaps many hundred yards, as has been the case here sometimes), this colouring cannot always be done. The easiest way to make these festoons is to fasten the string at one end to a wall or post, and, the twigs being already dressed, to hitch them on the string that supports them, using no other tie. Short lengths of six feet or so can be tied together to follow round a room. A small nail in some recess or crevice of the cornice-moulding will be sufficient to hang these light things upon. The loops ought not to be less than five feet apart where Ivy is used, but smaller-leaved evergreens may be closer. Drops or pendant ropes may hang at the corners, by the sides of projections or doorways, or anywhere that may be wanted, taking care that the foliage in all such cases points downwards.

Now, though Ivy festoons for the reasons given are the best when all sides are exposed to view, yet there are cases where something smaller would be better, and Box, Phillyrea, Yew, Cypress, and Juniper may be used; but, next to Ivy, Box is our favourite. This makes a much smaller festoon, and, consequently, is more used where space will hardly admit the other. The Irish Yew is useful for any very slender or tapering object when its rigidity and diminutiveness are wanted; and where slender pillars are to receive a spiral band, Cypress comes in handy when used alternately with something else. The taste of the decorator will, of course, easily perceive this. Pillars look well with such a coating, but if they are done so, the half-ones at the sides or commencement of the series ought to be done the same, even if the bands are obliged to be in short lengths and fastened at each end. Rosettes may be placed at regular intervals upon the festoons on the walls, a large one or a cluster or something else in that way being placed where the festoon is looped up.

Besides festoons, scrollwork is sometimes introduced. That must be formed on a wire foundation more or less strong, and bent into the proper shape and dressed, and many fanciful figures may be formed this way; but it is better not to get into much intricacy. We have, however, often suspended an ornamental piece of scrollwork from the centre of a room with good effect, or scrollwork may assume the character of brackets and project from the outer walls inwards, when the room is a very long one; but when it is square, or nearly so, this does not answer so well.

The worst rooms to decorate with evergreens are the Oak-panelled ones. These ought to be done with drapery some way,

and with an outer mixture of green. For instance: Take a quantity of white and pink calico, each a yard wide, and let them form a draped festoon, occasionally throwing the one colour over the other in carrying them round; but let them be as loose and as spreading as possible. On the front of this draped festoon a slight one of the darkest evergreen may be put. A Quercus or Phillyrea being better than Yew—the latter shows the bundling too much. Possibly other dark-coloured rooms may require a similar treatment; but this will easily present itself to the operator. I have, however, occasionally adopted a less costly plan, by having a quantity of white calico about three inches wide go spirally round the evergreen festoons, leaving quite as much to be seen as is covered. This gives a novel and not unpleasing effect, but the deception ought not to be too close to the observer.

It may be asked, Why is not Holly more recommended? Unfortunately, I have never been able to make much of Holly. Stiff, heavy, and obstinate, it cannot be made to take such an easy, agreeable form as the other evergreens. Sometimes, however, its berries may be worked into highly ornamental devices, or lettering done with them by their being fastened on by glue to a piece of oilcloth, or something that will take the place wanted to be filled. These purposes, however, are more generally the device and often the work of the more junior members of the establishment, and when well done they receive their proper meed of praise, and often deserve it. Holly berries, therefore, form an important feature in the general effect when judiciously used, but boughs with berries on rarely can be made to look artistic; and, apart from their pricklyness, each bough only looks well in the position it has been grown in, and this being often reversed in other things, the Holly looks badly when it is subjected to such treatment.

I need hardly say, that other evergreens may be used than those above enumerated, and sometimes other things as well. The old dead leaves of Beech and Oak (where they hang on the branches) make an interesting festoon as well, but must not be used with the other; and, for diversity, selected tops of Scotch Fir may be used, and even the common Laurel when it has to hang against a wall and only one side seen, care being taken to show only the outsides of the leaves. In fact, all kinds of evergreens are available for festoons; but those thickly clothed with leaves of rather a robust character are best, and when lettering of any kind is wanted on wirework, or the framework of a chandelier to dress, Irish Yew will be found as useful as anything, and, possibly, other things may suggest themselves to the decorator.

I have not said anything of the lighting of such places, as this is expected to be already determined on; but it is needless to say the lights ought to be numerous and of a plain description, they may also be covered or ornamented as described.

I cannot draw this subject to a close without inviting those who have had the duties of ornamenting public or private buildings or rooms, to come forward and describe the means they adopted; for the subject though not, perhaps, of so much importance as some others, is, nevertheless, becoming more so than it was, and the leaders in a movement that has beauty and elegance for its object have more credit than the followers. Let those, therefore, who have anything different to describe than is here done, make the pages of *THE COTTAGE GARDENER* the means of making it known.—J. R.

SHODDY AS A MANURE.

SHODDY which is used as manure is a different article from shoddy wool which is imported from the Continent to Hull, and from thence is forwarded to the manufacturing districts of the West Riding of York, to be used in the manufacture of cloth, &c.

Shoddy is the refuse dirt, grease, and wool, which passes through the machines used in the various processes of preparing wool for spinning. It is sold to farmers and others for agricultural and chemical uses. The price at the mills varies according to quality, from 5s. to 20s. per ton. Large quantities are sent into Kent to be used in the Hop plantations. Agricultural chemists use it in some of their manures dissolved by sulphuric acid.

Some agriculturists who like a good manure mix it with bones and dissolve it by sulphuric acid, thereby obtaining a first-rate manure. In west Yorkshire, where it is easily obtained, it is used in large quantities for grass land. Mixed with earth or other manures it is used for all kinds of crops. In this way its worst

fault is growing too much straw. There are persons who collect it from the mills, bag and forward it to the agricultural districts. Farmers and others who reside at a distance from where it is collected cannot be too careful in making their purchases, as it is easily adulterated with other refuse.—R. S.

BORDER AURICULAS.

MAY I commend to notice a much neglected flower which would, I feel sure, reward cultivation and hybridising, be no small attraction in the spring flower garden—I mean the alpine or border Auricula, of which I have already some varieties both shaded and in self colours, which are very remarkable for size and beauty? A slight notice in your pages would induce nurserymen to advertise the varieties they have, and thus enable amateurs to increase their collections; while some directions as to soil and culture would much oblige—A. M. V.

[An excellent subject for the new year. We have been raising seedlings of border Auriculas for the last five years, but more with the view of testing if they also are as little subject to the influence of pollen as the Polyanthus, than for the flower-borders; but a long stretch of our alleys are lined with a great variety of kinds, and some double ones. They all like a deep, moist, sandy ground, and to be removed, divided, and set in fresh soil every third year.—D. B.]

TRADE LISTS RECEIVED.

Peter Lawson & Son's List of Garden Seeds for 1861.—A copious list of all kinds of garden seeds, and containing many novelties we do not see mentioned elsewhere.

Catalogue of Vegetable and Flower Seeds, &c., by Francis and Arthur Dickson & Sons, 106, Eastgate Street, Chester, is a capital catalogue interspersed with some excellent practical cultural remarks.

Select List of Vegetable, Flower, and Agricultural Seeds, by William Paul, Cheshunt Nurseries, Waltham Cross, N., is a catalogue of very nicely selected articles, adapted for gardens of all sizes.

A Priced Catalogue of New and Genuine Seeds for 1861, by Milne & Co., Wandsworth Road, S.—This is another of those catalogues which evince care in their preparation. It contains many useful notes.

Catalogue of Vegetable, Flower, and Agricultural Seeds for 1861, by William Cutbush & Son, Highgate, N., is a good and useful catalogue.

TO CORRESPONDENTS.

TACSONIA MANICATA AND THUNBERGIA HARRISII BUDS FALLING (J. H.).—The dull season was against your plants. We should suspect dryness at the roots, and coolness and dullness in the air, as the reason why the Tacsonia flower-buds did not expand. The Thunbergia referred to likes a good moist heat to open its blooms, and a drier heat to keep them some time in bloom. We have no doubt you will succeed better next year.

FLUE IN CUCUMBER-PIT (J. V., Swansea).—You will find several answers on much the same subject. There is the objection to smoke-flues to which you allude. You do not give us the height of your house. However, to have Cucumbers in winter and early spring in it, you would require two four-inch pipes for bottom heat and two for top heat. Were we to make the most of such a house, we would make it into two beds $4\frac{1}{2}$ feet wide each, and a pathway of 3 feet between them. We would take two four-inch pipes below the front bed, and run the flue from the furnace underneath the back bed; and, to be quite sure, we would rather have a four-inch pipe all round for top heat. The front pit we would use for winter and early spring Cucumbers; and the back could be used for other things, then not needing quite so much heat. We would use the back for later spring and autumn Cucumbers, which would succeed the front ones. The flue might be so secured that no escape of gas could come from it, and thus all the heat from the fuel would be absorbed.

PRUNING PEACH AND CHERRY TREES IN POTS (J. C.).—The name of the plant is *Gesnera elongata*. Without knowing more we cannot be sure, but would cut your eighteen-inch-long Peach and Cherry shoots back one-third or even more. Most of the pruning should be done in summer.

PROPAGATING MONOCHÆTUM ENSIFERUM (Idem).—Propagate the Monochætum much as you would do a Fuchsia or a Lobelia at this season. Take off a few short shoots with a heel of the old wood, insert in sand under a loose glass, and place in a little bottom heat.

ROSES (J. H. M.).—The Roses you inquire about—Madame Marie Bower, Madame Auguste, and Mount Vesuvius, we never heard of. They are either so old as to have been forgotten, or are too new to be among the novelties of 1860, or are some local names.

ERRATA.—Page 218, first column, third sentence of last paragraph, the word "proving" should be "pruning." To Correspondents, last line of third paragraph "close combustion" should be "quick combustion."

NUMBERS OF VOL. XXIII. (A Subscriber, H. M.).—All the Numbers can be had from our office, free by post, on receipt of four postage stamps for each, with the exception of No. 575, which is out of print.

WOODLICE AMONG FERNS (Roby).—We know nothing of the properties of Keating's Persian Insect Powder; nor do we know how you can rid your fernery of woodlice, except by trapping them, as we have frequently particularised.

ALSTROMERIAS FOR BEDDING (A Subscriber).—Alstromerias are not suitable for bedding according to the "bedding system." Their mode of growth, or their appearance in a bed by the side of bedding plants, is so different as to destroy the harmony; neither are the flowers of Alstromerias so lasting as is necessary for the bedding system. But all the Alstromerias grow better in beds than in pots—that is, they increase faster and grow stronger in less time, and produce ten times more flowers after they attain their full maturity. They, and the Gladioluses, and the spring Tulips, the pretty Scillas, the Atamasco Lilies, with all the original wild species of Calceolarias and Lobelias, would grow comfortably in one bed or one kind of soil—that is, a light, deep, sandy loam. There is one exception, however, in *Alstromeria aurea*. It is a tall front-of-a-shrubbery plant to range before the Hollyhocks; but to sustain that, its true character, it should be grown in strong clay soil. We have had it on the London brick clay seven feet high, and spreading like couch grass, flowering, and seeding, and rising from self-sown seeds, in "unmitigable clay," all within a musket-shot of Handel's grave. *A. psittacina* is the one for the centre of a bed. *Pulchella* and *Hookerii*, and their allies, are now swallowed up in the seedlings from *hæmantha*; and their name is legion on the one side, and absolute confusion on the other. *Pelegrina* is not so suitable for out-of-door beds, being less hardy. The bed for Alstromerias should be secured from frost and wet in winter if the roots are left out; and they would do better that way, and to be lifted only once in three years or so.

PEACH TREES IN TUBS (A Young Beginner).—These will do in either the vinery you start in February, or in that which has no artificial heat. The Peach trees may be moved out into a sheltered place in June, if you are gardening in the south of England; but you give us no information on this essential point. You, like many other correspondents, seem to think we are clairvoyants.

GAS LIME (Gas Lime).—It is a good manure for Clover, Trefoil, and Lucern, but rarely of benefit to other crops, unless the soil is deficient in calcareous constituents. It should be mixed with earth, and turned frequently before being applied. It might be useful on your sandy gravel to improve the soil's staple.

GUINEA CORN (Nom).—Although it may not be recognised by the name of Guinea Corn, yet we know there is plenty of it in Liverpool, and it is better known as "Indian Millet." It is the seed of *Sorghum vulgare*, a native of India and China as well as of Africa.

CYCLAMENS (H. N. E.).—Ferrarius must have written on hearsay about Cyclamens. The bulbs cannot be divided with impunity. His *Narcissus indicus* delicious was probably our *Tuberosa*; but we have not his figures by us, or we might tell them all. *Gelsemium* is still extant; but whether it was the same plant as is now so called we have no means of determining.

NAME OF FERN (R.).—The Fern is *Davallia pentaphylla*. The Orchid looks like one of the small-flowered *Maxillarias*, but was too much crushed to be recognised.

POULTRY AND BEE-KEEPER'S CHRONICLE.

POULTON-LE-FYLDE POULTRY ASSOCIATION.

JANUARY 16TH AND 17TH.

(Communicated.)

THE third annual Exhibition of Poultry in connection with the above Association was held in the schoolroom (kindly lent for the occasion) at Poulton-le-Fylde, and, considering the severity of the weather for the last few weeks, the birds exhibited were in excellent condition, only four pens out of the number entered being empty.

The classes opened with *Spanish* of any age, and although the entries in this class were not numerous, some choice specimens were to be seen; Mr. Teebay's birds deserving especial mention. In *Dorkings* many first-class birds competed, and gave the Judges a difficult task to decide who were to have the honours. The *Cochins* were highly meritorious, all varieties competing in one class. The *Game* classes here, as elsewhere, were foremost in entries. The *Black Reds* were not so numerous as the *Browns*; but both varieties were well up in quality. The class for "any other variety" of *Game* only made a poor muster, if we may except Mr. J. Fletcher's pen of *Blacks*, and Mr. J. Brown's *Duckwings*. The *Chicken* class was the strongest in the Show, and, consequently, the competition very severe, many excellent pens having to be satisfied with a Commendation. The *Golden-pencilled Hamburgs* we did not consider so good as have been at this Show in previous years. There were only three pens of *Silvers* exhibited, and out of this number one pen belonging to Mr. Wm. Cannan, was disqualified through the cock's comb being trimmed to such an extent. The *Golden* and also the *Silver-spangled* formed unusually good classes; but we cannot pass over these two classes without remarking that the decisions gave great dissatisfaction; many pens which deserved prizes were not even Commended. In the distinct varieties there were some beautiful *Polands*. We were sorry to see these birds competing against *Brahmas*, *Malays*, &c., and hope another year a class will be opened for this variety. The *Bantam* classes were well represented; Mr. Turner taking the first prize

closely followed by Mr. C. W. Hull, both pens being deservedly admired.

The Ducks were numerous, and many excellent pens competed. The first-prize pen of Rouens exhibited by Mr. Sykes were pronounced by the Judges to be the best pen they ever had the pleasure to award a prize.

The Sweepstakes for *Game Cocks* was the grand attraction, and the names of the winners will begin to be familiar with the readers of THE COTTAGE GARDENER. The Cockerels left nothing to be desired, and the same names, with one exception, figured in the list of prizetakers in this class. *Game Bantam Cocks* were a pretty class, Mr. Hawksley winning two prizes out of the four awarded. The *Pencilled Hamburg Cocks* were good, and the prizetakers in this class may feel proud of their birds.

SPANISH.—First and Third, R. Teebay, Fulwood, near Preston. Second, Capt. H. Heaton, Yew Bank, Lower Broughton, near Manchester. Commended, E. Brown, Albert Street, St. Philip's Road, Sheffield.

DORKING.—First, T. W. Hill, Heywood, near Manchester. Second, J. Robinson, Vale House, near Garstang. Third, T. W. Hill, Heywood, near Manchester. Commended, Mrs. W. A. Mocatta, Bispham, near Fleetwood.

COCHIN-CHINA.—First, T. Stretch, Marsh Lane, Bootle, Liverpool. Second, H. Tomlinson, Balsall Heath Road, Birmingham. Third, E. Smith, Middleton, near Manchester. Highly Commended, Mrs. W. A. Mocatta, Bispham, near Fleetwood; D. Anderton, Cleveleys, near Fleetwood.

GAME (Black-breasted or other Reds).—First, J. Fletcher, Stoneclough, near Manchester. Second, G. W. Moss, the Beach, Aigburth, Liverpool. Third, W. and A. Grimshaw, Pendle Forest, Burnley. Commended, Munn and Schofield, Stacksteads, near Manchester; D. Parsons, Cuerden, near Preston; J. S. Butler, Poulton-le-Fylde; R. Parkinson, Poulton-le-Fylde.

GAME (any other variety).—First, J. Fletcher, Stoneclough, near Manchester. Second, J. Brown, Preston. Third, W. Brocklebank.

GAME CHICKENS (any colour).—First, J. Fletcher, Stoneclough, near Manchester. Second, J. Brown, Preston. Third, G. W. Moss, the Beach, Aigburth, Liverpool. Highly Commended, W. and A. Grimshaw, Pendle Forest, Burnley; Munn and Schofield, Stacksteads, near Manchester. Commended, W. Gault, Poulton; W. Rogers, Woodbridge, Suffolk; R. Carr, Leyland; R. Leigh, Regent Street, Preston; J. Firth, Lily Lane Mills, Halifax.

HAMBURGH (Golden-pencilled).—First, J. Munn, Stacksteads, near Manchester. Second, S. Smith, Northowram, near Halifax. Third, R. Parkinson, Poulton-le-Fylde.

HAMBURGH (Silver-pencilled).—First, J. Dixon, Bradford. Second, J. Munn, Stacksteads, near Manchester.

HAMBURGH (Golden-spangled).—First, W. Cannan, Bradford. Second, S. H. Hyde, Taunton Hall, Ashton-under-Lyne. Third, W. R. Lane, Bristol Road, Birmingham.

HAMBURGH (Silver-spangled).—First, W. Cannan, Bradford. Second, J. Fielding, Newchurch, Manchester. Third, J. Dixon, Bradford.

ANY OTHER VARIETY NOT NAMED IN THE BEFOREMENTIONED CLASSES.—First, R. Teebay, Fulwood, near Preston. Second, J. Dixon, Bradford. Highly Commended, R. Teebay; J. Dixon. Commended, W. Cannan, Bradford.

GAME BANTAMS (any colour).—First, M. Turner, 32, Ribblesdale Place, Preston. Second, C. W. Hull, Vicarage, Poulton. Highly Commended, H. Shield, Northampton; R. Moon, jun., Sandford Lodge, Wavertree, Liverpool; T. H. D. Bayly, Ickwell House, near Biggleswade, Beds. Commended, J. Hawksley, jun., Southwell, Notts; W. H. Butcher, Lea, near Preston.

BANTAMS (any other variety).—First, T. W. Hill, Heywood, near Manchester. Second, E. Hutton, Garden House, Pudsey, near Leeds. Highly Commended, Capt. Heaton, Yew Bank, Lower Broughton, near Manchester; T. W. Hill. Commended, J. Dixon, Bradford.

DUCKS (Aylesbury).—First, W. Rossall, Carleton, near Poulton. Second, T. W. Hill, Heywood, near Manchester. Commended, J. Sykes, Breck House, Poulton.

DUCKS (any other variety).—First, J. Sykes, Breck House, Poulton. Second, J. Dixon, Bradford. Highly Commended, T. H. D. Bayly, Ickwell House, Biggleswade, Beds; G. S. Sainsbury, Rowde, Devizes.

SWEEPSTAKES FOR SINGLE COCKS.

SPANISH.—One entry.

DORKING.—No entry.

COCHIN-CHINA.—One entry.

GAME (any colour).—First, J. Fletcher, Stoneclough, near Manchester. Second, J. S. Butler, Poulton-le-Fylde. Third, W. and A. Grimshaw, Pendle Forest, Burnley. Fourth, R. Leigh, Regent Street, Preston. Highly Commended, T. H. D. Bayly, Ickwell House, Biggleswade, Beds. Commended, G. W. Moss, the Beach, Aigburth, Liverpool; J. Mackie, Lune Street, Preston; T. Shaw, Kirkham.

HAMBURGH (Golden and Silver-pencilled).—First, E. A. Wilkinson. Second, Carter and Valiant, Poulton. Highly Commended, J. Munn, Stacksteads, near Manchester.

HAMBURGH (Golden and Silver-spangled).—No entry.

POLANDS.—No entry.

GAME BANTAMS (any colour).—First, M. Turner, 32, Ribblesdale Place, Preston. Second, T. H. D. Bayly, Ickwell House, Biggleswade, Beds. Third and Fourth, R. Hawksley, jun., Southwell, Notts. Commended, R. Perry, Kirklington, Southwell.

SWEEPSTAKES FOR GAME COCKERELS.—First, W. and A. Grimshaw, Pendle Forest, Burnley. Second, J. Fletcher, Stoneclough, near Manchester. Third, J. S. Butler, Poulton-le-Fylde. Fourth, T. Eastham, Bridge Lane, Preston. Commended, S. Birch, Blackpool; R. Parkinson, Poulton-le-Fylde; T. Shaw, Kirkham.

The Judges were Mr. S. Foulde, Chowbent, near Manchester; and Mr. W. Chorley, Warrington.

PLYMOUTH POULTRY, PIGEON, CANARY, CAGE BIRD, AND RABBIT SHOW.

We are glad to see that this is revived under most excellent auspices, and with a good prospect of becoming annual. It is to be held in St. George's Hall, a place excellently suited for it. There is a good working Committee, a liberal prize list, and an energetic Secretary. Several of the railway companies have agreed to convey the birds at half the usual charge, and that railway which does not do the same will evince that its management is short-sighted. Further particulars will be seen in the advertisement. We hope all our large exhibitors will patronise this Show.

NOTTINGHAM EXHIBITION OF SINGING BIRDS.—JANUARY 9TH AND 10TH.

(Communicated.)

THE third annual prize Exhibition of the Midland Singing Bird Society, open to the world, took place in the Exchange Hall, Nottingham. Notwithstanding the adverse state of the weather, and the trying character of the past season to the feathered tribe generally, the quality of the birds shown was decidedly superior to that of any previous Exhibition of the kind in the midland counties. The number of birds exhibited affords ample reason for the belief that additional interest has been manifested in the "fancy" for these domesticated pets since prize shows were first introduced; while a reference to the list of prize winners will show that it is not merely in our own immediate neighbourhood that the feathered songster is regarded worthy of a prominent place among the favoured institutions of the country. On this occasion nearly every class of birds was represented, including Canaries, Hybrids, and British and foreign birds of every shade of colour, from the mischievous Piping Crow to the tiniest specimen of the Wax Bill. The collection of hybrids was more noticeable, perhaps, for the first-class character of the specimens than for the number exhibited. Of course, where so many superior birds are caged in one room it is difficult, if not impossible, to select the most meritorious. In class 27, however, we noticed a Goldfinch and Bullfinch Mule, shown by Mr. E. Hawkins, of London, which attracted considerable attention on the part of connoisseurs, as an exceedingly rare specimen and very superior bird. Mr. John Varley, of Burton Street, the Hon. Secretary, who has worked assiduously to bring the Society to its present pitch of prosperity and usefulness, in order to give an additional stimulus to competition this year, started a subscription for a handsome prize cup, value £5, to be awarded to the exhibitor who should obtain the highest certified rank as a prizeman throughout the various classes of birds. This prize was supplied by Mr. Shepperley, of Pelham Street, and awarded to Mr. Hawkins. It bore the following inscription, very neatly engraved:—"Subscription cup awarded as an extraordinary prize to Mr. E. Hawkins, the most successful competitor at the Grand Annual Exhibition of the Singing Bird Society, held at the Exchange Hall, Nottingham, January 9th and 10th, 1861."

The Judges were—for British and Foreign Birds, John Hardy, Esq., Nottingham; John S. Hedderley, Esq., Sneinton; William Felkin, Esq., Beeston. Canaries and their Hybrids—Mr. G. J. Barnesby, Abbey Street, Derby; Mr. F. Adderton, Nottingham, assisted (in the Norwich classes) by Mr. T. Large, Birmingham. Umpire—the Rev. J. M. Valpy.

We subjoin a list of the prizes awarded:—

CANARIES.—*Clear Yellow.*—First, J. Carnall. Second, E. Hawkins. *Clear Buff.*—First and Second, E. Hawkins. *Ticked Yellow.*—First and Third, E. Hawkins. Second, W. Clarke. *Ticked Buff.*—First, W. Clarke. Second, J. Knibb. Third, E. Hawkins. *Belgian Variegation (Yellow).*—First and Second, W. Phillips. Third, E. Hawkins. *Belgian Variegation (Buff).*—Prize, E. Hawkins. *Nottingham Variegation (Yellow).*—First, E. Hawkins. Second and Third, W. Phillips. *Nottingham Variegation (Buff).*—First, J. Carnall. Second, W. Clarke. Third, W. Phillips. *Uni-coloured (Green).*—First, T. Ord. Second, W. Phillips. *Uni-coloured (Cinnamon).*—First and Second, S. Strafford. *Lizards (Jonque).*—First, W. Phillips. Second, E. Hawkins. Third, W. Clarke. *Lizards (Mealy).*—First, W. Clarke. Second and Third, E. Hawkins. Highly Commended, W. Phillips. *Crested (Yellow).*—First, J. Pennington. Second, E. Hawkins. *Crested (Buff).*—First, J. Pennington. Second, E. Hawkins. *Norwich (Jonque).*—First and Third, R. Mackley. Second, —Tomes. Highly Commended, R. Mackley. *Mealy.*—First, Second, and Third, R. Mackley. Highly Commended, E. Hawkins.

HYBRIDS.—*Canary and Goldfinch Mule Jonque.*—First, T. Nettleship. Second, E. Orme. Third, J. Pennington. *Mealy.*—First, E. Hawkins. Second, W. Phillips. Third, J. Pennington. Highly Commended, T. Nettleship. *Canary and Linn t Mule, Mealy.*—Prize, J. Pennington. *Goldfinch and Bullfinch Mule.*—Prize, E. Hawkins.

BRITISH BIRDS.—*Siskin*.—Prize, E. Hawkins. *Goldfinch*.—Prize, E. Hawkins. *Woodlark*.—Prize, E. Hawkins. *Skylark*.—Prize, H. Hawkins. *Nightingale*.—No prize awarded. *Robin*.—No prize awarded. *Blackbird*.—Prize, W. Phillips. *Song Thrush*.—Prize, R. Mackley. *Jackdaw*.—Prize, E. Hawkins. *Jay*.—No prize awarded.

FOREIGN BIRDS.—*Cockatoos* (Rose-breasted).—Prize, E. Hawkins. *Cockatoos* (Rose, Salmon, or Orange-crested).—Prize, E. Hawkins. *Cockatoos* (White).—Prize, E. Hawkins. *Parrots* (Grey).—Prize, E. Hawkins. *Paroquets* (Rose-ring or Bengal).—First, Miss Prew. Second, E. Hawkins. *Bloodwing, ditto, Australian Grass or Shell* (in pairs).—Prize, Miss Prew. Prize, W. Rose. *Love Birds* (in pairs, West Indian).—Prize, S. Scrimshaw. *A pair of another kind of Love Birds*.—Prize, E. Hawkins. *Turquoise*.—Prize, E. Hawkins. *Lories* (Blue Mountain).—Prize, E. Hawkins. *Grand Chinese*.—Prize, E. Hawkins. *Yellow-headed*.—Prize, E. Hawkins. *Diamond Sparrows* (in pairs).—No prize awarded. *Java Sparrows* (in pairs).—Prize, E. Hawkins. *Nonpareils*.—Prize, E. Hawkins. *Weaving Birds* (in pairs).—Prize, E. Hawkins. *African Wax Bills*.—Prize, S. Scrimshaw. *Blue Birds*.—Prize, S. Scrimshaw. *Bishop Birds*.—Prize, W. Rose. *Piping Crow*.—Prize, E. Hawkins. *Red-cheeked Nymphicuson Cockatiels*.—Prize, E. Hawkins. *White French Doves* (a pair).—Prize, E. Hawkins.

THE PHILOPERISTERON SOCIETY'S SHOW.

The above Society held their Annual Grand Show of Fancy Pigeons at the Freemasons' Hall, Great Queen Street, London, on Friday the 18th inst.; and not, as heretofore, on the second Tuesday in January, owing to the Hall having been let for other purposes. The number of birds shown was far more numerous than usual, and of very superior quality; the Society having been much strengthened by the addition of many new members, amongst whom are Messrs. Peter Eden, Townley Parker, and Tegetmeier.

In the *Powter* department, Mr. Bult (the President) shone pre-eminent, his birds being of first-rate quality, and in excellent condition. Messrs. Smith, Hayne, Eden, and Tegetmeier also contributed some very fine birds; the last-named gentleman having some young *White Powters* of very great length. The *Carriers* were truly magnificent: Mr. Hayne showing his birds which took the first, second, and third prizes at the Crystal Palace Summer and Winter Shows, besides his commended birds. Mr. Eden also brought ten pairs, many of which were winners of prizes. Messrs. Parkinson, Chalker, and Square also contributed several birds of acknowledged excellence. Then the *Almond Tumblers* were plentiful: amongst which was the first-prize bird at Halifax, the property of Mr. Esquilant, who also exhibited short-faced *Tumblers* of every colour except Whites. Mr. Percival also sent *Almonds*, and a very extraordinary *Kite Tumbler* which was very much admired. But who can describe Mr. Wicking's beautiful collection of *Toys* which occupied the whole of the right side of the Hall? There, in perfection, were *Turbits*, *Magpies*, *Baldheads*, *Owls*, *Swallows*, *Brunswicks*, and *Jacobins*, all equally good and interesting. These birds, the produce of many years' skilful breeding, we are sorry to say, will be seen no more by the public as the property of their generous owner, he being about to retire from the fancy, which will undoubtedly lose in him one of its noblest and brightest ornaments. Many other gentlemen also showed birds of considerable merit. Mr. Harrison Weir, the Vice-President, as usual had a pair of *White Fantails*, though of still finer quality than of previous years, being wonderful in carriage, and marvellously clean considering they are kept in London. Mr. Weir's great fault being that he had too many in one pen, they did not show to advantage being overcrowded. Nor must we forget to mention Mr. Smith's of Halifax, fine pen of *Barbs*, for one of which he was offered the munificent sum of £10 10s.

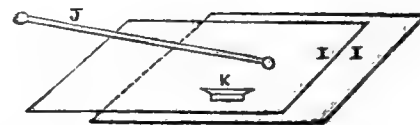
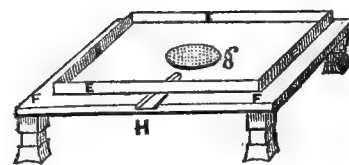
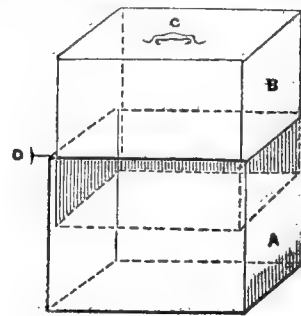
There were, also, many other very good birds, too numerous to mention, shown by Messrs. Lucy, Archer, Stevens and other members.

In a word, the Show reflects the highest credit on the members of the Philoperisteron Society, and shows progress in every way; and, although the exhibition was a FREE ONE, the Society provided a band of music with the hope that it would render it still more attractive to the friendly visitors who had journeyed from all parts of England at their invitation. In fact, the last Show was in every way the greatest success.

NEW DEPRIVING-HIVE.

THE facility afforded in using the above form of hive is apparent at a glance. It is thus managed:—if we have two hives according to the above measurements, one fitting exactly, and allowing of smooth, gliding motion within the other, and the inner one containing a swarm, we can, at any moment that we perceive the usual symptoms of overcrowding (such as a cluster

of bees forming at the entrance of hive), raise the inner hive by means of its handle, fix it at any height we may think fit by a small peg placed in the side of it; and thus we afford any quantity of room necessary to allow the bees, which will be at once apparent by those retiring within the space given by drawing up inner hive within outer or external hive. Thus we allow the bees to continue the formation of the combs downwards from inner to lower and external hive. The inner hive is thus raised when necessary; sometimes preventing swarming, and always giving room, until the combs attached to the top of inner hive are formed far down within external one.



This Diagram shows the Hives lifted off stand.

EXPLANATION OF DIAGRAM.

- A. Hive, 16 inches square, inside, without top or bottom, made of well-seasoned red deal; if possible, sides to be made of one piece of inch-stuff.
- B. Inner hive, about 16 inches square, outside measure, having a top and open bottom, made to fit inside external hive A; the sides of this box to be covered with cloth, to allow of easy gliding motion within external hive, and to keep out damp. B shows this hive drawn up a little within outer hive A; in this way room is given by its being drawn up, even to the top, when required, as in swarming, &c.
- C. Top and handle of inner hive.
- D. Peg to fix hive at any height required.
- E. Small frame, 3 inches deep and $\frac{1}{4}$ inch thick, to be attached to hive-stand to prevent hive slipping off stand, and when bees are smothered, to be covered by glass plate (when hive is removed) to contain the bees.
- F. Hive-stand, 17 inches square, 1 $\frac{1}{2}$ -inch stuff, in the centre of which there is an opening, G, 3 inches diameter, to be covered with perforated zinc; this opening is to be closed underneath by a small panel on hinge. This opening allows, when required, the ether vapour to ascend through it; and if at any time we require to feed the bees, we fill glass with honey and water, &c., and place it beneath the zinc, by which the bees can drink and not soil themselves.
- H. Entrance of hives, 2 inches broad, 6 long, and $\frac{1}{4}$ inch deep, running beneath frame E and edges of hives, and to be cut out of hive-stand.
- I. I. Two plates of glass.
- J. Comb-knife $\frac{1}{4}$ -inch broad, $\frac{1}{8}$ or less thick, sharp at one edge, and 2 feet long.
- K. Glass cup to fit opening G, to be used in applying ether, or in feeding bees.

The entire honey-store may be taken at once, or but the inner hive-store, as the case may be, in the following manner:—We will suppose that we allowed the combs to reach from top of inner hive, extending through external hive almost to hive-stand, thus nearly filling both hives extended. We take the honey from upper hive thus: On a calm evening we close the entrance, draw up the inner hive to the edge of external one, have it held steadily so; tapping it smartly all round and on top, we drive down the bees from it into lower compartment; and when we believe most of the bees have left the upper part and descended, we yet draw inner hive up yet a little more, sufficient only to allow the entrance of the comb-knife, as described, between the lower and upper edge of both hives. By drawing the knife to us we cut the combs between each, leaving the cut surfaces still in apposition. We introduce between them two plates of thin glass, of sufficient size to cover the cut surfaces and hives; one plate to keep any bees that remain in upper hive, and the other to cover and keep in the bees of the lower or external hive; in this easy

way taking the honey without the use of any vapour, or the killing of one little labourer for our benefit. The plate of glass on under hive is after replaced by a wooden panel, fitting tightly and kept so by a weight placed over it. If the under or external hive is required to have the honey taken from it afterwards, it may be done thus, at any time, without the escape or loss of one bee: We shut the entrance of hive, as before, in the evening, gently remove the corner of the opening under the hive in hive-stand, and place immediately beneath this opening the glass, which may contain about two ounces of good sulphuric ether, to be left so until such time as we cannot hear any noise or loud humming, &c., within the hive. We now cautiously remove the glass containing ether, shut the small panel over the opening, and, if the ether vapour has acted sufficiently, we will find on lifting the hive the space within the small frame on the hive-stand full of the insensible bees; we now place a sheet of glass over this space, resting on the frame, and thus confine the bees as they recover. Now, we can either remove the honey from the hive and replace it again as before; or, drawing slowly away the glass, allow the bees to creep up another new hive of the same construction. The bees will be found to take possession of this at once, and "forgiving and forgetting," work again for those who spared them. If the hive is made to consist of three compartments instead of but two, the same management is followed. And I may here remark, that in this form of hive, if we have the inner compartment formed of glass, which can be easily done, we can at any moment, by raising it, have the pleasure of allowing our fair friends to view those "fragrant bowers of the busy bee."

The reason I have recommended the use of good sulphuric ether in place of chloroform is, that I have found it equally effective in all cases as chloroform, and from my experience of chloroform teaching me to believe it at all times a dangerous plaything—rapid in its fatal effects, and often acting in a most unexpected manner. I do not mean to say that ether should not be used with caution also; we must regard it as the next anæsthetic agent to chloroform, although not so rapid in its action on the system. The vapour of ether may be made to rise at once into the hive by the glass containing it being placed in a small quantity of hot water as it is placed under the hive.

Now, to sum up all the advantages of the hive—A child can at any time prevent swarming from it whenever this may be caused by want of space; and thus I believe, that if we had hives of this construction on a sufficient scale, we could prevent swarming at our pleasure by thus allowing space, and thereby ever keeping with us an enormous number of those industrious insects engaged; it completely prevents the necessity of the destruction of even a single bee; it permits us to remove any ordinary-sized hive full of honey *without even the use of any vapour*, or the *escape of one single bee about the party doing so*; it requires less time in its management, and less trouble than any other form of hive, and it also affords us an easy mode of feeding our little labourers in winter, without that exposure to frost, &c., which kills greater numbers of them than we can calculate.

Thus, I would hope that the two great points as regards the management of bees are in some manner gained. We not only do not require to kill the bees, but we increase their numbers and keep them with us; we do not alone save more honey, but we also save, in doing so, time and trouble to ourselves.—R. W. MEDICUS.—(*Irish Farmers' Gazette*.)

PROTECTORS AGAINST TOMTIT.

THE unusual severity of our present winter, with its perpetual snow mantle, has brought our feathered tribes to the last extremity. The Wood Pigeon forgetting her retiringness flits among the reddening laurels and hollies, watching with greedy eye her more favoured domesticated namesakes at their tempting repasts. The Water Hen leaves her frozen burn to return the summer visits of her old acquaintances, the Aylesburys, enjoys pot luck, fraternising with them openly in the yard. Even hardy Blackbirds have been found in our neighbourhood frozen to death sitting side by side upon the rails. Is it to be wondered at, then, during such an existing state of things, that that sly little marauder, the Blue Titmouse should be more than usually active in filling his rapacious maw with such delicious tit bits as our poor honey bees?

Your apiarian readers cannot be too much on the alert against the ravages of these, their inveterate enemies. In weather

such as the present, it must be borne in mind, that it is not alone what they devour, but by their repeated tappings many bees are set in motion, leave the combs, encounter the chilling atmosphere upon the board, get numbed, and are frozen before reaching the entrance—abundant proofs of which I see daily. Their stratagems and perseverance are surprising. No farther gone than yesterday, annoyed at the effrontery of their attacks upon a row of four hives placed near each other, I put a period for a time to their proceedings, as I supposed, by stopping up tightly the entrances with pieces several plies thick of a newspaper I chanced to have in my hand, but master Titty was not to be so baulked of his breakfast. On passing this forenoon, how provoking to find the papers pulled out of three of the hives, and thrown over the landing-boards, to accomplish which feat must have required persevering tugging, while at the moment the little gentlemen were, no doubt, snugly ensconced out of sight in an old yew hard by digesting, and enjoying the chagrin their success had caused.

Last winter I thought for a time they were fairly checkmated, by tying a piece of net over the entrance cut in the straw thatch, and placing thereon numerous running nooses of horsehair. Numbers perished in the attempt to storm the citadel in front. Suddenly they ceased to be so trapped, and, on watching concealed, found the besieged were again at their mercy, having been taken in the rear. They flew behind the hives underneath the long thatch, fluttering long on the wing till they made good a footing on the narrow ledge of the board, ran round on it to the entrance, and there feasted underneath my very guard.

Recollecting the friendly hint of "A BEDFORDSHIRE BEE-KEEPER" in your columns last spring, I have recently given nux vomica a fair trial, but found it did not suit. Our pests being, perhaps, "too far north," to be so done here, giving always a decided preference to the bees, and leaving the poisoned dough to the more necessitous but innocent Redbreasts: I, therefore, discontinued its use entirely. Thinking I might also possibly lose through eating their carcasses, some favourite tortoiseshell tabbies, my staunch allies in the Titmouse wars, I have hit upon an expedient by which to set my enemies at defiance. For the benefit of your readers permit me to describe it. Take a piece of $\frac{1}{2}$ -inch pine board dressed $3\frac{1}{2}$ inches broad, divide it into as many 7-inch (or length from hive to end of landing-board) lengths as you have hives, draw a line from the one extreme corner to the other, and with a fine saw cut it in two; these placed on their straight edge, the bevelled being uppermost with the points outwards, form the two sides of the protector. Set them as wide apart as the breadth of the landing-board will allow, and retain in position by nailing the top of the deep ends on to a bit of $\frac{1}{2}$ -inch board 2 inches deep (this will leave $1\frac{1}{2}$ inch clear above the entrance). Through the last-named piece attach to the front of the hive with two small screws; along the edges drive a number of stout sprigs, and on these stretch a piece either of hemp or wire net ($\frac{1}{2}$ -inch or so mesh) to within three-quarters of an inch of the points, this to be left for an entrance to the bees. The net had better be raised on a mild day.

By the use of this simple contrivance I hope you will hear no more of the Titmouse troubles of—A RENFREWSHIRE BEE-KEEPER.

THE RABBIT (LEPUS CUNICULUS).

ITS HISTORY, VARIETIES, AND MANAGEMENT.

CONEY is the name by which this animal is first mentioned in all our earliest records—a name evidently derived from some root common to most European languages. In Italian it is called *Coniglio*; in Spanish *Conejo*; in Portuguese *Coelho*; in German *Koniglein*; in Dutch *Konyn*; in Swedish *Kanin*; in Danish *Kanine*; in ancient British *Cwningen*; and in Latin *Cuniculus*. We are told by Varro that this name was given to the animal by his countrymen on account of their dwelling in burrows—*cuniculos* (*De Re Rustica*, lib. 3, c. 12); but it might be that the burrows derived their name from that of their makers and inhabitants, which is sustained by *Ælian*, who says (*De Nat. Anim.* xiii. 15) that the name is of Spanish origin.

Sonini says that the Rabbit was called in Greek *dasypous*—that is, hairy foot; but we have thought this applied to the Hare—in Chaldee *thapsa*; in Arabic *vebar*; in Persian *besangerah*; in Illyrian *cralik*, or *krolik*; in Austrian *kunighase*; in Flemish *konyn*; and in Russian and Polish *krolik*.

The Rabbit will only thrive in a wild state in temperate climates. It will not live under any circumstances in very hot

countries; and in Sweden, and elsewhere having long severe winters, it can only be preserved in houses. Northern Africa and the southern parts of Europe seem to have been its native places. In America it was unknown until introduced by Europeans.

The Chinese legislator Confucius ranges the Rabbit among animals worthy of being sacrificed to gods, and prescribes their multiplication. Even now Rabbits are sacrificed on their altars twice a-year—in spring and autumn. Thirty thousand Rabbits are annually sacrificed. These sacrifices are made in one thousand six hundred temples in spring to ask that the earth may be as fruitful as Rabbits, and in autumn to return thanks for that fruitfulness. Many races, or varieties, of Rabbits are bred in China with success; and the populations consume a great number.

It is certain that the Rabbit was venerated by the ancients, and, as in the case of fowls, altars were raised to it in the Isle of Delos in Ortygia, now called the Grecian Archipelago. The Greeks even went so far as to ornament with marble the entries of their warrens, or vast galleries where these animals could have a common issue and multiply.

From Greece the cuniculine race passed into Spain, and particularly to the Balearic Isles. Pliny mentions that the inhabitants of these were obliged to defend themselves against their voracity, as they ravaged the harvests, and undermined the houses and lands with their burrows. The prodigious fecundity of these little animals was considered a plague—a public calamity; and being unable to get rid of them the islanders asked the Emperor Augustus to send some Roman troops to aid in destroying them. The troops were sent and with them ferrets. Of course, these statements refer to wild Rabbits. (*Pliny's Nat. Hist.*, b. viii., c. 81.)

The Phœnicians were the first navigators who discovered the southern part of Spain, and penetrated into this extremity of Europe. Even in the Phœnician language is the etymology of the name which that country now bears. It is said that formerly *Armorica*, the ancient Spain, was so overrun with Rabbits, that by dint of burrowing under ground, they even overturned the houses of the inhabitants. *Spanija* in the Phœnician language signifies a Rabbit, of which the Latins have made *Hispania*, and we Spain. It is then very probable that the name *Hispania* was substituted by the Romans for that of *Armorica*, at the time of their conquest, to distinguish it as the "*Rabbit country*," as they changed the name of the country of the Celts into *Gaul*, *Gallia*, or "*country of cocks*."

This opinion is somewhat sustained by the fact, that on the reverse of a medal of the Emperor Adrian Spain is represented by a woman sitting on the ground with a Rabbit squatting upon her robe. (*Addison on Medals*. Dial. iii., series iii., fig. 6.) There was a pack of cards formerly in the possession of Francis Douce, Esq., the four suits in which were roses (hearts), pinks (diamonds), columbines (spades), and Rabbits (clubs). The originals are believed to have been from the pencil of the celebrated German artist, Martin Schoen, who died in 1486. (*Strutt's Sports and Pastimes of England*.) We have no doubt, judging from the costume of the kings, queens, and knaves of those four suits, and considering the contentions going on between the four great European powers at the time in which they were drawn, that they were intended to represent England, Austria, France, and Spain. Every card-player does not know that the term *basto* is derived from the Spanish *Bastos*, a club; and spades from *espados*, a sword, in the same language.

In confirmation of our opinion we find that on the monument of Richard Cœur de Lion, in the cathedral of Notre Dame, at Rouen, there is the head of a Rabbit peeping out of a hole, and a dog watching it. This, says Mr. Alfred Way, was not placed there without design; and a writer, in answer, observes that it probably alludes to that monarch's successful attacks upon Spain and Sicily, on the coins of both of which countries Rabbits are well-recognised symbols.—(*Notes and Queries*, v. 598.)

Strabo, who calls the Rabbit "the burrowing Hare," says (iii. 2, § 6) that it was found over nearly the whole of Spain, and in the Balearic Islands, reaching also as far as Massilia (Marseilles, in France). Polybius mentions (xii. 3) that the Rabbit is a native of Corsica.

The notices by Varro, Strabo, Polybius, Ælian, and Pliny, are the earliest which we can identify with the animal known to us as the Rabbit. It is quite certain that the *Shaphan* of the Old Testament (*Lev. xi.*, 5, *Deut. xiv.*, 7, *Psalms* civ., 8, *Prov. xxx.*, 26) is not our Coney or Rabbit. The translators of our

version knew of no other animal but this at all agreeing with the *Shaphan*, and, therefore, so translated it. But the Rabbit is not a native of the countries in which the Israelites sojourned, nor is there the slightest probability that it was known to Moses, David, or even Solomon. At all events, the Levitical law would not forbid the eating of an animal the Israelites never saw. The Hare is common enough in Palestine and adjacent countries, and so is the *Ashkoko*, the habits of which animal closely agree with that of the *Shaphan* as mentioned by Solomon. He mentions this animal as one of the four "which are little upon the earth, but are exceeding wise." "The *Saphans* are but a feeble folk, yet make they their houses in the rocks." (*Prov. xxx.*, 24-26) Mr. Bruce says that this animal, the *Ashkoko*, is so much attached to the rock that he never once saw it on the ground, or from among the large stones in the mouth of caves where it constantly resides. It is a native of Judæa, Palestine, and Arabia. Though it resides among the rocks, yet its feet are too fleshy and tender to dig holes: therefore, it builds houses among the very hardest rocks, more inaccessible than the burrows of Rabbits, and very sagaciously constructed. Moreover, it chews the cud, as particularised by Moses, which is not the case with the Rabbit.

It is probable that during the time of Cæsar, and while he was in Gaul, the "country of cocks," that the Rabbit was introduced into England.

That it was so introduced seems sustained by the fact that its most ancient British name, *Cwningen*, is evidently derived from the Latin. Rabbits rapidly spread throughout our islands, for their great fecundity is not diminished even in the colder climate, Scotland. This fecundity there obtained for them our now common name of Rabbit, for in Gaelic, *Rabaid* is a Rabbit; plural *Rabaidean*, Rabbits; *cuilean Rabaid*, a young Rabbit; and *Rabaid* seems to be derived from *rabach*, plentiful, fruitful. (*Armstrong's Gaelic Dict.*)

This name soon came into general use in England. It is true that in the translation of the Bible as late as the reign of James I., the word *coney*, probably as being more English, was employed by the translators, but at a far earlier period the name of Rabbit was employed.

Thus in the "Privy Purse Expenses of Elizabeth of York" (p. 13), under the date of May 24th, 1502, is entered the payment of two shillings "to a servaunt of the Abbess of Syon in reward for bringing a present of Rabettes and Quayles to the Quene at Richemount."

At first, of course, only the grey wild Rabbit would be known, and for their protection a peculiar warren, called a *coningry*, was established. This, however, was not until the Norman period of our history, and about the same time and with similar intentions as they were established in France. We are told that there it was under the reigns of Philip Augustus and Louis VIII., at the beginning of the thirteenth century, that the French nobles began to people with wild Rabbits some countries which they called "*varennés*," thence "*garennés*," in English "*warrens*." The name of "*varennés*" remained to "several bourgs, villages, or countries, because they were built in a place peopled with wild Rabbits. (Clichy-la-Garenne, now in Paris, was the favourite hunting-place of Henry IV.)

The design of the French nobles by introducing Rabbits to their grounds, was to multiply game, and increase the pleasures of the chase and the table.

It is well known that at these early periods the lords were warriors and hunters. They took no interest in agriculture, industry, or commerce. The chase entertained the warlike spirit, and inured them to fatigue. They did not know, or did not care, what ravages the Rabbits made in the harvests of their serfs, the cultivators of the soil.

The Rabbit warren, as we have already noted, was called in England a *coningry*. Thus in a statute passed in the year 1390 (13 Rich. II. c. 13) occurs this sentence—"Vont chaceants es parkes, garennés, et conyngers des seigneurs et autres;" or, in English, "They hunt in parks, warrens, and conyngries of lords and others." A warren, in those days, meant a place belonging to some one privileged to keep in it all fowls and beasts of warren—namely, Partridges, Pheasants, Hares, and Rabbits (*Blount's Glossary*); but a *coningry* was a place where Rabbits only were preserved.

Rabbits, like some other animals, are liable to produce varieties, and this not only in the colour, but in the length and form of the hair. Black individuals occur in our warrens. In Syria we read of a wild sort with thickly tufted hair. The

Angora Rabbit has very long fur. A breed with similarly lengthy coat formerly existed in the Isle of May, at the mouth of the Frith of Forth (*Naturalist's Library*); and Sunk Island, in the Humber, was once famous for a mouse-coloured kind. They were extirpated on account of the injury they did to the banks by burrowing (*Phil. Trans.*, No. 361).

When variations such as we have particularised were first noticed, it is probable that they were caught and bred from separately, and that thence arose the breeds of domestic Rabbits which we now foster. What little we know about these will be stated when we consider each breed separately.

How long it is since these domestic kinds were first cultivated we know not; for Tusser, the first of our writers who mentions them, says no more than this, when writing the abstract of "January's Husbandry," in 1580:—

"Let doe go to buck,
Wish coney good luck."

Half a century later, however, in 1631, we find Gervase Markham writes as follows in his "Way to Get Wealth":—

"The boxes, in which you shall keepe your tame Conies, would be made of thin Wainscot-boards, some two foot square, and one foot high; and that square must be divided into two roomes, a greater room with open windowes of wyre, thorow which the Conie may feed; and a lesser room without light in which the Conie may lodge and kindle, and before them both a Trough, in which you may put meat, and other necessaries for the Conie; and thus you may make boxe upon boxe in divers stories, keeping your Buckes by themselves, and your Does by themselves, except it be such Does as have not bred, and then you may let a Bucke lodge with them: also when your Doe hath kindled one nest, and then kindleth another, you shall take the first from her, and put them together in a severall boxe, amongst Rabbits of their owne age; provided, that the Boxe be not pestred, but that they may have ease and liberty.

"Now for the choice of these tame rich Conies, you shall not as in other Cattell, looke to their shape, but to their richesse, onely elect your Buckes the largest, and goodliest Conies you can get: and for the richesse of the skin, that is accounted the richest, which hath the equallest mixture of blacke and white haire together, yet the blacke rather shadowing the white, than the white any thing at all over-mastring the blacke, for a blacke skin, with a few silver haire, is much better than a white skin, with a few blacke haire: but as I said before, to have them equally, or indifferently mix'd, is the best above all other: the Furre would be thicke, deepe, smooth, and shining, and a blacke coat without silver haire, though it be not reckoned a rich coat, yet it is to be preferred before a white, a pyde, a yellow, a dun, or a gray.

"Now for the profit of these rich Conies, (for unlesse they did farre away, and by many degrees exceed the profit of all other Conies, they were not worthy the charge which must be bestowed upon them) it is this: First, every one of the rich Conies which are killed in season; as from *Martilmas* untill after *Candlemas*, is worth any five other Conies, for they are of body much fatter and larger, and when another skin is worth two pence or three pence at the most, they are worth two shillings, or two shillings and six pence: Again, they increase oftener, and bring forth more Rabbits at one kindling than any wilde Conie doth; they are ever ready at hand for the dish, Winter and Summer without charge of Nets, Ferrets, or other Engines, and give their bodies gratis, for their skins will ever pay their Masters charge with a most large interest.

"Now for the feeding and preservation of these rich Conies, it is nothing so costly or troublesome as many have imagined, and as some (ignorant in the skill of keeping them) have made the world thinke: for the best food you can feed a Cony with, is the sweetest, shortest, softest, and best Hay you can get, of which one load will serve two hundred couples a yeere, and out of the stocke of two hundred, you may spend in your house two hundred, and sel in the Market two hundred more, yet maintaine the stocke good, and answer every ordinary casualty. This Hay in little cloven sticks, the Rabbits might with ease reach it, and pull it out of the same, yet so, as they may not scatter nor waste any. In the troughes under their boxes, you shall put sweet Oates, and their water; and this should be the ordinary and constant food wherewith you should feed your Conies, for all other should be used but physically, as for the preservation of their healths: as thus, you shall twice or thrice in a fortnight, for the cooling of their bodies, give them *Greenes*; as *Mallows*, *Claver grasse*, *Sower-docks*, blades of greene *Corne*, *Cabbage*, or *Colewort-leaves*,

and such like, all which cooleth and nourisheth exceedingly: some use to give them sometimes sweet *Graines*, but that must be used very seldome, for nothing sooner rotteth a Cony.

"You must also have great care, that when you cut any grasse for them, or other weeds, that there grow no yong *Hemlocke* among it, for though they will eate it with all greedinesse, yet it is a present poison, and kills suddenly: you must also have an especiall care every day to make their boxes sweet and cleane, for the strong savour of their odour and urine is so violent, that it will both annoy themselves, and those which shall be frequent amongst them.

"Now for the infirmities which are incident unto them, they are but two: the first is rottennesse, which commeth by giving them too much greene meat, or gathering their *greenes*, and giving it them with the dew on; therefore let them have it but seldome, and then the drinesse of the Hay will ever drinke up the moisture, knit them, and keepe them sound without danger.

"The next is a certaine rage or madnesse, ingendered by corrupt blood, springing from the ranknesse of their keeping; and you shall know it by their wallowing and tumbling with their heeles upward, and leaping in their boxes. The cure is, to give them *Hare-thistle* to eate, and it will heale them."

(To be continued.)

OUR LETTER BOX.

BANTAMS (Bessie).—All Bantams are excellent layers in summer and winter; but it is just because their eggs are not saleable on account of their size that they are seldom profitable stock. We believe that any fowl properly and carefully fed will pay its own expenses, but Bantams' eggs will never be of ready sale till all are sold by weight as they should be. The Sebrights are the least mischievous anywhere—their eggs are often unfertile. The Game are now deservedly popular, and they are free breeders. You may keep four or five hens to a cock. They will do more good than harm in the kitchen garden. They will not do one-quarter of the damage that would have been done by the insects and reptiles they consume. If they ran together they would keep distinct from the larger fowls. They do not eat one-quarter as much as the large ones. We cannot tell you the exact cost, but you should keep Bantams well on one penny per week. We are unable to tell you the price of them or of Brahmas. Apply to Baily, Mount Street, Grosvenor Square.

FOWLS NOW MOULTING (S. H. R.).—We cannot tell you why the pullet is moulting; such things have happened in our own yards at times, but we can find no cause for it. You must recollect moulting is a natural process, and the feathers are replaced by new ones; but it is possible for birds to suffer from fever of the body and skin, and consequently to lose their feathers: this is not moulting. We have known this to result from the use of meat and hempseed, but, fed as yours are, it cannot be the case. We must on this, as on all other occasions, protest against your stone floor. Your fowls will never do well so long as you have it.

MAKING HENS SIT (Young Amateur).—Broody hens will be scarce for some time. There have been few layers during the severe weather. We know no means of making a hen sit. There used to be barbarous plans in vogue some years ago, but they did not succeed. The only coercion we ever use is, when a hen does not sit closely and well we put her in a box without a bottom, in which she cannot stand, and is compelled to sit close down on the eggs.

DUTCH RABBITS PROFITABLE (Young Beginner).—The Dutch Rabbits are very pretty and useful. No breeder of Rabbits should be without two or three, in the event of their other does neglecting their young or dying. No matter how you handle the young of Dutch Rabbits. I never had one forsake her young; whereas with the other fancy kinds many will never take any notice of their young at all, and, only for my Dutch nurses, I should often lose the produce of valuable Rabbits. They are very profitable, being extraordinarily prolific and always in good demand. "A YOUNG BEGINNER" could not choose a better Rabbit to keep: they are very hardy, and their colours vary just as the long-eared varieties. Some are very handsomely spotted. The price varies according to colour, purity of breed, &c., from about 4s. to 10s. each. They are very scarce, and will pay for breeding.—R. S. S.

BOOK ABOUT RABBITS (Idem).—We find Despony's and all other French works on Rabbits so deficient, that, gleaning from them what is good, and under the supervision of "R. S. S.," we begin to-day publishing what will be the most complete and trustworthy Treatise on Rabbits and their management yet published.

GUINEA PIGS (F. H.).—Feed them like Rabbits. Let them have water. They are very prolific. The Guinea Pig is the *Cavia cobaya*, or Restless Cavy of zoologists. It is a native of Brazil. No doubt that, like squirrels, they are edible, but also, like squirrels, it is not usual to admit them among our bills of fare. They cannot endure either cold or damp. The doe breeds when two months old, and has from ten to fourteen young ones in one litter, several times a-year after a gestation of three weeks. We may note also that the Guinea Pig is especially fond of parsley, as well as of apples and almost all other fruits.

BREEDING THE GREY PARROT.—Can any of your subscribers inform me whether any attempt has been made to breed the Grey Parrot in this country, and if so with what success? Would any one also kindly state their experience as to the best kind of food for them? I am of opinion that sopped bread is too relaxing.—A CONSTANT SUBSCRIBER.

CANARIES.—Walter Hugo will find some useful information in "The Birdkeeper's Guide," Deane & Co., Threadneedle Street, London, and other books on Canaries; but the best practical information he will gain by experience. I will endeavour to detail a little of my own experience in the series on "Canaries and British Finches" now publishing in THE COTTAGE GARDENER.—B. P. B.

WEEKLY CALENDAR.

| Day of M'nth | Day of Week. | JANUARY 29—FEBRUARY 4, 1861. | WEATHER NEAR LONDON IN 1860. | | | | Sun Rises. | Sun Sets. | Moon Rises and Sets | Moon's Age. | Clock before Sun. | Day of Year. |
|--------------|--------------|------------------------------|------------------------------|------------|-------|-----------------|------------|-----------|---------------------|-------------|-------------------|--------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | |
| | | | | deg. d. g. | | | m. h. | m. h. | m. h. | | m. s. | |
| 29 | Tu | Protea amplexicaulis. | 29.596—29.493 | 47—25 | S.W. | ·03 | 45 af 7 | 42 af 4 | 59 a 8 | 18 | 13 28 | 29 |
| 30 | W | Protea melliæra. | 29.250—28.896 | 45—33 | S.W. | ·39 | 44 7 | 44 4 | 24 10 | 19 | 13 38 | 30 |
| 31 | Th | Isopogon anethifolius. | 29.610—29.421 | 42—29 | N. | — | 42 7 | 45 4 | 50 11 | 20 | 13 47 | 31 |
| 1 | F | Mezereon. | 29.770—29.714 | 40—23 | N.W. | — | 40 7 | 47 4 | moon. | 21 | 13 55 | 32 |
| 2 | S | PURIFICATION. CANDLEMAS-DAY. | 30.020—29.916 | 39—30 | N. | — | 39 7 | 49 4 | 15 1 | 23 | 14 2 | 33 |
| 3 | SUN | SEXAGESIMA SUNDAY. | 30.257—30.186 | 40—23 | N. | ·06 | 38 7 | 51 4 | 37 2 | 23 | 14 9 | 34 |
| 4 | M | Erica herbacea. | 30.235—30.160 | 45—35 | S. | — | 36 7 | 53 4 | 53 3 | 24 | 14 14 | 35 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 43.8° and 31.1° respectively. The greatest heat, 57°, occurred on the 3rd, in 1850; and the lowest cold, 8°, on the 31st, in 1857. During the period 138 days were fine, and on 100 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

Capsicum seeds of the various sorts to be sown in pots, and placed in heat. *Carrots*, make a sowing of Early Horn on a slight hotbed, either to succeed the former sowing recommended, or to come in for a first crop. Where the soil is light and dry, a sowing may be made on a south border. *Cucumbers*, if a seed-bed is made, and the dung was previously well prepared, it will be ready to receive the seeds after a few days. When the rank steam has passed off, a layer of light sifted soil to be placed on the surface to the depth of three or four inches. Sow the seeds in shallow pans or in pots half filled with leaf mould. After sowing lay a piece of glass on the top of the pot or pan, to prevent mice getting at them. *Onions*, those who are short of old ones, or who wish to grow some to a large size, should now sow some of the White Spanish in a box, to be forwarded in heat. The Underground or Potato sort to be planted. *Peas*, sow in pots or boxes for planting out in March; also sow in the open ground in a dry warm situation. Cut and prepare Pea-sticks for use, lay them flatways in heaps, and lay some weighty logs upon them to press and keep them flat and spreading. When the weather will permit, draw a little earth up to the rows of early Peas, which will now be on the move. When cold winds prevail they will be benefited by the shelter of a few spruce fir branches stuck on the sides.

FLOWER GARDEN.

Those who have alterations to make in planting and groundwork may begin as soon as the frost is out of the ground. When planting large shrubs the rakings of leaves, so frequently advised to be collected into heaps, if mixed with the soil will greatly assist them in making a vigorous start. To produce a pleasing variety in the general outline of ornamental shrubberies it is necessary to look over them every two or three years, to remove every hedge-like line, and to form bold recesses where space will admit of them. Carnations and Pinks in pots to be attended to; remove all damp, and protect them from heavy rains. Auriculas and Polyanthus to be kept tolerably dry at this season. Hyacinths may still be planted. Plant Ranunculuses and Anemones if the ground be in a dry state. If the soil in the bed be in a poor condition throw it out to the depth of one foot, place a layer six inches thick of well-rotted hotbed and cowdung, and fill up the bed with fresh maiden loam from a pasture.

FRUIT GARDEN.

Planting against walls and the open quarters may now be carried on when the ground is in a proper condition, and the weather favourable. Mulch the newly planted trees, and stake at once those requiring it. When Filberts are kept dwarf, Kent fashion, which is the best system of cultivating them, let all suckers be removed, and some manure forked in around the trees; shorten all the strong shoots of last year's growth, but do not touch the smaller ones, as it is from those the nuts are principally produced.

STOVE.

Some of the plants will now begin to grow, such should be potted if they require it, and to be then placed in the warmest and lightest part of the house. Seeds of stove exotics may now be sown: some will require to be placed in a hotbed, particularly the seeds of any of the plants belonging to the Natural Order Leguminosæ; while others will do better in the stove where there is more air, and less heat.

GREENHOUSE AND CONSERVATORY.

Pelargoniums intended to succeed the hardwooded plants after midsummer will require to be stopped. After they have made shoots half an inch long to be potted in turfy loam, with a little leaf mould, cowdung, and sand; the plants to be rather under than over-potted, to produce a good head of bloom. Scarlet Pelargoniums for vases, baskets, or single specimens, to be shaken out of their pots, and repotted into fresh soil, and to be supplied with a gentle bottom heat for a week or two until they make fresh roots; to be then removed to a light airy part of the greenhouse, and about the middle of March to be shifted into large pots for a splendid supply of bloom. Cinerarias, if underpotted, or if they have been standing near the heating apparatus during the late severe weather, must be sharply looked after before they get infested with insects. The old plants of Fuchsias to be shaken out of their pots; reduce the roots, and repot them; to be introduced to a temperature of 60°, and when the cuttings are an inch long strike them, and grow them as rapidly as possible, to attain a good size before they show their bloom.

PITS AND FRAMES.

Plants from which cuttings are required must be placed either in a frame where there is heat, or in the stove, or some other warm place; the hotbed to be prepared with well-fermented dung, well sweetened. Put in cuttings of all half-hardy plants as they can be procured. Look over the plants in these structures at every opportunity. Pick off all dead and decaying leaves.

W. KEANE.

DOINGS OF THE LAST WEEK.

THE frost continued sharp in the first part of the week, but it moderated with slight skiffs of snow towards the end, and we had a slight thaw on Sunday, a fine west wind on Monday, a clear sky on Monday night, and a clear sky this day (Tuesday, the 22nd). In the first part of the week, young Cabbages were examined, and as the snow disappeared Laurel twigs were laid along the rows that the plants might thaw gradually. A very few may lose their growing-points. Most of the large Savoy thus protected will come round nicely. All appearances seem to indicate that Peach trees out of doors, and other tender things—such as the tenderer Roses, will suffer considerably though slightly protected. The out-door work has chiefly been confined to rough pruning, wood splitting, pointing Pea-sticks, turning heaps of soil, breaking ice in tanks to prevent the walls being injured. The mornings and bad weather were taken up in whittling and straightening flower-stakes of all sizes and all kinds of wood obtainable—Ash and Hazel being considered the

best, and much more esteemed than stakes cut from laths, which are always so staring: indeed, a painted stake made by a carpenter, in our eyes does not look so nice as one of these young shoots, well dried with the bark on as firm as may be. When cut green in summer they are not half so good. Every little twig from prunings, such as Currants, if a foot long or so is saved, and so of other kinds of prunings. When these are merely pointed with two draws of the knife, and put in bundles and nicely dried in a shed, how useful they come in in summer when time is so valuable. Stems from Fuchsia stools make capital little slender sticks after they are frosted. That frosting must take place or the shoots be extra well dried, or when placed in a pot they will grow like a fresh Willow shoot.

The cold-pits were examined on Monday, but let alone. To-day (Tuesday, January 22nd), most of the covering has been taken off; but enough left to keep out the light, and a little air given. Some Geraniums are injured, but not many; and the Calceolarias have a black leaf or two on them, but will take little or no harm. Some put in late after the first frost, just beginning to root, are as fresh as possible. They were growing little, and, therefore, felt the cold and confinement less. All this just proves what our friend Mr. Beaton so ably advocates. Keep such things as stunted and as dry as possible to be safe in such places, and the better they will do. If mild and dull to-morrow we shall clean the damped leaves off; if bright sun we shall delay a little.

We have to day taken the litter from the roof of the conservatory, and little signs of the frost will be seen there. A few leaves of climbers close to the roof are rather brown, but the wood is all safe. Were it not approaching the personal, it would be as good as a play to tell the outs and ins about getting a boiler, and the some half-dozen feet of piping to connect it with the old pipes. I merely mention it as a warning in cases of great emergency. Had I been in London, with the aid of a smith I could have had all I wanted done in the days I had to wait weeks for. However, "all's well that ends well." Without pulling a mass of brickwork about, I could not replace, except by a saddle-back, and thanks to that being well set, it does heat nicely and no mistake. Large Pelargoniums, Cinerarias, and Chinese Primulas, Roses, and Deutzias, have been brought into the conservatory to make room elsewhere. A Peach-house crammed with bedding plants has been nearly cleared to enable it to be brought on, the plants being brought into the late vinery standing thick in boxes. A number of these boxes, containing Alma and Flower of the Day, have had the plants transferred singly to small 60-pots, and these have been put into a vinery, where the heat averages 50°, where they will remain until they make nice roots, and make room for something there that needs more heat. Strawberries are in the same place close to the glass. The Verbenas, transferred to 48-pots out of 60-pots, have grown so vigorously since that means must be had for topping them for cuttings, as I always prefer these to the spring-struck.

A Fig-pit has been thoroughly cleaned, and the trees washed with soap and water in case a scale or anything else should escape, care being taken not to rub the young shoots too hard where the embryo fruit can be seen, though not larger than small pin-heads. This house will not be pruned until the buds break; but as frost will be excluded and a little heat ere long given, many things may be kept and forwarded before the Fig foliage darkens the pit too much. When the woodwork partly painted is dry, another house may be emptied, that that likewise may be thoroughly cleaned. Dwarf Kidney Beans have been potted, and others sown in boxes in a pit averaging from 55° to 60°. Sea-kale and Rhubarb have been good, but we must economise a little until we take some more roots up. The Sea-kale was covered with a couple of inches of litter out of doors, but even with that there is no getting into the ground. Mushroom-beds have been cleaned by sweeping over with a hair broom. One spawned a fortnight ago has been earthed up with an inch and half of stiff loam, kneaded down well, beaten firm, and then sprinkled with water, and a clean spade drawn firmly over it; so that the surface is first as smooth, and, ere long, as firm as a barn floor. Beat down another bed, consisting of tree leaves below and some six inches of longish straw and horse-droppings above. We prefer horse-droppings, but as I have only the dung of four horses to meet all requirements, I must be content with making the most of them. As Mushrooms are pretty well a daily affair, I make only small beds at a time, and in general these are not more than from ten to fifteen inches deep. They do not bear very long, but by the above mode we generally have a bed

coming in before the other goes off. My Mushroom-house is a shed with a pathway down the middle, and a hot-water pipe below it, and two beds on each side, one on the ground, and one in the shelf form. In one of the ground departments we grow most of our early Sea-kale, Rhubarb, blanched Turnip tops, &c. Asparagus this season is not so fine and productive as usual, which I attribute partly to the wet, dull, cold summer preventing the buds being well matured. Potatoes in pots have been earthed up, and a score more pots filled. These are very useful. When the tubers are about ready, they will be sure to be at the sides of the pot; so that by turning the ball of earth out carefully, you can prick out the forward tubers, and put the pot over the ball again without injuring the smaller ones.—R. F.

KIDD'S NEW SYSTEM OF HEATING AND PROPAGATION BY CUTTINGS.

I HAVE now permission to say that the new system of heating by hot air has been invented by Mr. Kidd, for the Marquis of Breadalbane, at the Stud House, Hampton Court. To keep it separate from Polmaise we must give it some name; and as Mr. Kidd's own name carries as much force and influence in anything relating to sound, practical gardening as any name on our list, it is the most telling name that I can think of. Mr. Kidd is favourably known to most readers of THE COTTAGE GARDENER as the author of the plan for striking cuttings in water—that is, cuttings of Verbena and other soft-wooded plants in an inch of water, or less depth, and half an inch of sand at the bottom of the water. But, of course, if the propagating-pan is so much deeper, more sand or more depth of sand may rest at the bottom, which is merely to steady the cuttings, and to keep them from tumbling about; and, of course, also, if the saucer is too shallow to admit of the proper bottom of sand, the cuttings will root just as well in the water itself. Of all the simple modes of propagation, this in water seems the cleanest cut, and the fairest for the fair, and for all who wish their cuttings to do fairly with the smallest trouble to themselves or those about them.

But the Kiddean system of heating is much more simple and less hard to learn than that of striking cuttings in tea things, and, probably, it will turn out in the end to be the next best step to strike cuttings with after the Waltonian Case. Mr. Kidd writes thus:—

"In your article on my system of heating in THE COTTAGE GARDENER, you have left nothing for me to add, farther than to state that it is quite perfect with me, and is so simple that a child might be taught in five minutes to understand it. It will require, however, a practical head to set it going. I see no bar or any difficulty in heating any kind of structure by this system, from the smallest pit or greenhouse up to those of the largest size, also sitting-rooms and all other apartments throughout a country or town residence, and down to the cottages of the poor. Indeed, every fireplace which is now in use for domestic purposes might be made, by this simple plan, to do four times the amount by heated air that it is capable of doing by radiation. So you see it is as applicable for the town as it is for the country. But instead of writing an article on it as you desired for THE COTTAGE GARDENER, and more particularly as you have hit the mark yourself so nearly, all that is left for me to do is merely to answer any inquiries respecting it which may appear in your pages, which I shall be happy to do; but really I can foresee no great cause for inquiries. However, you may use this letter as you think best."

Half the people in this world do really believe as firmly as they do the Bible, that when you come to a lord's house or castle, or to that of a duke or marquis, you must necessarily see more extravagance and less economy than in the dwellings of those who have to contrive all means for making both ends meet. Such people will be apt to take that view of this mode of heating without giving it a thought, because it has been first done for a

great man to whom expense is no object, as they will say. There never was a greater fallacy in the world. Why, it is in these high places of the earth, in this country and kingdom, that cheapness, good management, and economy, if there is any difference in these terms, are to be seen and learnt to their full extent and meaning; for I have been there and elsewhere, and can speak to the point with perfect ease and confidence. If I were to hear of a thing which I wanted for myself, to have been in use at the Lord-Lieutenant's of my native county, I should have a great deal more confidence in it than if it were recommended by the approval of any lower standard in the place: therefore, the very reason which might deter my neighbour from trying his luck against the frost with this mode of heating, would be the most potent in my case to stir me up, in the night season, to the point of determining on doing the thing on the morrow. The reason is this: Great country gentlemen have so many more departments in their establishments than rich city men; and each department requires a head so much different from the heads of the rest of the staff, that city life in departments cannot come in for comparison with it: therefore, every head of every department in a great country establishment is resting on its own bottom, has a separate authority and a separate responsibility; and that, although it may not suggest to any one of the heads the mere saving of money, it will stimulate every one of them, if they were put right on the shoulders, to make every shilling shine—and to make every bit o' siller shine is the root and secret of all economy, and he who cannot do that in these days will not be able to hold the head of a responsible charge longer than the fact takes to prove itself. Hence the reason and the stimulant why country affairs on a large scale are so much more economically conducted than those on more moderate scales; and hence, too, the reason why I should like to see or to hear how a nobleman's house is heated before heating my own.

Next, let us examine the models upon which we may with reasonable safety rely for the greater use and extension of this hot-air system of heating. Here there is room for as many heads of the subject as were in the sermons of Kettledrummie of Castle Tillietudlem in the "Tales of My Landlord," which were generally fifteen, the practical applications "forby."

In the first place, all the heat that is now applied by the flue system might be more economically given without a flue at all; if a roomy hot-air chamber were built round the fireplace to the flue, and the neck of the flue itself included, the heat from the same quantity of coals would serve to keep two greenhouses of the same size at the required temperature, and with less hurt to the plants from sulphurous exhalations. In the second place, hot air, if necessary, will pass in lower channels than the source of heat—that is, lower than the furnace and ash-pit, which hot water will not do. In some situations this, of itself, is of great practical advantage, and obviates the difficulties of getting under pathways, or other obstructions to the flow of hot water on the level. In the third place, all the bottom heat which we now obtain by closed tanks—made waterproof for the circulation of hot water, or merely for pipes to pass through a body of water—may be more easily had by a hot-air chamber under the bed instead of a tank; and there would be no necessity for that precision or tightness in the joints, or cement to avoid leakage, which is the all-in-all of the tank system. In the fourth place, heat which is hermetically sealed, as in a close iron pipe, or in a tank secured by a close covering, is just of the same safety for plants, whether it be obtained from hot water or burning sulphur, because the smell of the burning cannot escape. In the next place, the heat from a hot-water pipe, or from the sides and top of a closed tank, is just as dry as that from the surface of the old flue; the advantages of the hot-water system are that the heat is free from that sulphurous

smell which the flue imparts more or less, and that the heat is uniform throughout the whole length, instead of being hottest at one end, as in the flue system. But the heat from the circulation of hot air is even more uniform than that of hot water itself, as is perfectly proved these two last severe winters in the conservatory at the Stud House by Mr. Kidd. All the heat for that house is admitted through two openings in the path at one end or the house, and the farthest end of the house has been all along just as warm and just as soon warmed as the end at which the hot air is admitted: therefore, there is no doubt upon that head of the subject.

There were no complaints against the diffusion or distribution of heat by the Polmaise system as far as I recollect. The great stumblingblock in the Polmaise was the iron plates, which either cracked and allowed the contamination of the air from the burning fuel, or, if the plates stood proof against the heat, they were soon so overheated that they burned all the goodness, as it were, out of the air passing over them, and so destroyed it for the use of man or beast, and more so for the use of plants. And the next cause of failure with that system was the difficulty of getting the cold-air currents from the houses so heated to act properly, and often against back draughts or currents. All these sources of failure and of disadvantage are got rid of entirely and for ever by the Kiddean mode, which he vouches for as being so simple that a child may understand and manage it.

There are many more heads to the subject which will occur to heads of other capacities, and for such heads I leave them for the present, and take to some of the applications. The foundation and the marrow of success with the Kiddean system of heating I take to be the construction, the capacity, and the materials of the air-chamber. A very little practice will teach the management of the fire, and of the damper or dampers, or registers, for the admission of fresh air into the air-chamber and to the fireplace, and for checking the hot-air current and the draught in the chimney. A day's practice before the fire is a better way of getting at the command of this thing than a volume of details. The way I shall build my furnace is this: The ash-pit and fireplace will be completed first; three courses of bricks will be the depth of the ash-pit, and three courses of fire-bricks will be the height of the sides of the fireplace; the top of the fireplace will be arched over with fire-bricks, which will give a greater capacity for fire and a better play to the flame or heat than a flat top. That will give six courses of bricks in height, without counting the height of the arch. Then, six inches from the foundation of the fireplace, a wall, nine courses of bricks in height, will be built square on the side and ends, making it flush or even with the fireplace in front. This will also be arched over with hard-burnt bricks, and being a foot wider than the opening of the fireplace, the second arch will be higher than the first; but the space will not be too high, or of too much capacity for a hot-air chamber to a common greenhouse.

The cheapest and best mortar that I know of for resisting fire is made of fresh slaked lime, so much slaked at a time, just as if making cement, and the dust ashes from a smith's forge: this kind of mortar soon sets like cement, but not if the lime is not hot from the slaking at the time of mixing. I have used the blue sticky fireclay of Stourbridge against this kind of mortar, and to this day I know not which is the best of the two: they are both best, but the blue clay is prodigious and most awful to work without reducing it too much for the job with water. Over the centre of the fireplace I shall have a flue-door into the air-chamber, and a ventilator on each side of the fireplace near the bottom, with a small opening at the farthest end of the ash-pit—say two inches wide and the depth of a brick. This air-hole will be always open; and as long as there is a particle of heat in all this brickwork, there will be as regular a flow of

warmed air into the greenhouse, as the best set hot water can give.

The side ventilators will be opened in a sliding manner to let in an inch of air, or six inches, as the heat of the oven or the coldness of the night may suggest; and the door over the fireplace is for examining the oven, and dusting it out if needs be, and perhaps for putting in a dish of water to moisten the air, or a pie-dish of all manner of perfumed herbs to simmer away, for the purpose of perfuming as well as of heating the air of the house.

The whole of the outside of that casing of bricks I shall have covered with the best non-conducting thing I can find, but at present nothing occurs to me more handy than a foot of the driest sandy or peaty soil. But for my cold pit I shall have this Kiddean system at one end, and to range with the glass, and without an arched roof to the oven. I must find something flat to cover it; for I mean to have my propagating-light over the oven and make it range with the lights of the pit, so that one could ever find out the difference; and when there was no frost or want of heating for the pit, the air-vent will be all but closed, and sufficient heat for propagation will be got by a fire of faggot wood, or any cheaper fuel I may find.

Captain Hopkins, of Surbiton Hill, who beat me last year with his hardy Grapes, has a contrivance of this kind at the end of his greenhouse, which answers remarkably well, and has done so for some years, but it is worked with hot water without a boiler. He has a coil of gas-pipes lining the fireplace; one leg of the coil is a flow-pipe into the propagating-tank, and the other the return from the same. The tank is of some metal, and is as close as a pipe: therefore, although the heat is from water, it is not more moist than that which I expect from the Kiddean system.

D. BEATON.

THE LITTLE MARKET-GARDENER;

OR,

HOW TO CULTIVATE AN ACRE OF LAND WHEN PROFIT IS THE CHIEF AIM, AND SHOWING HOW A FAMILY MAY BE SUPPORTED AND SOMETHING PUT BY FOR A RAINY DAY.

I THINK a little information on this subject is wanted. We can learn from books how to grow anything, but when that question, "How can I grow for profit?" comes, it seems to be a poser.

I have been asked hundreds of times this question, "What shall I plant in my garden this time that will pay?" And I have very many times heard people say, "If you expect profit from a garden you will find yourself disappointed."

Some will ask, "How do market-gardeners make a living and pay their way, if no profit is to be obtained by gardening?" This question is the one I intend to answer in this work.

I have been a market-gardener in a little way myself for thirteen years, and I have also had the management of gentlemen's and tradesmen's gardens the same length of time. I have kept a debtor and creditor account both for myself and my masters, and am, therefore, able to answer any question on the subject from my books.

In the first place, I will show what a market-gardener may grow upon one acre of land; what the crops should cost to grow them; and what they would be likely to be worth when grown.

I will, then, show how to go about them, and I will state how I have brought gardens that have been given up as good for nothing to be the best gardens in the neighbourhood; and, lastly, I will explain why gentlemen's and tradesmen's gardens do not pay for cultivating.

If you have made up your mind to be a market-gardener, the first question to ask is not "What can I grow?" but "What can I sell?" I will tell you what I should plant upon one acre of land myself for the first year, if I were to go to a strange place to begin.

I should enter in a book the quantity of everything I planted, and the cost of planting. I should also enter what I made of

each crop separately, and whether I had too much of this and too little of that. I should then see which crops paid the most money, and whether I had plenty of sale for those crops. If so, of course, I should plant more of those crops that paid most money the next year and less of the others.

An acre of land contains what we call in Shropshire rather better than seventy-five rods. What we call a rod contains sixty-four yards—viz., a space eight yards each way.

I reckon after I have made my walks, that I have in cultivation about seventy-two of these rods, and will now show you what to plant them with the first year, and what I should expect each crop to cost in planting, and what I should expect each crop to be worth.

FIRST CROP.

| Name of Crop. | No. of Rods. | Cost of Seed. | Cost of Manure. | Worth of Crop. |
|------------------------------------|--------------|---------------|-----------------|----------------|
| Early Cabbage | 6 | £ 0 0 6 | £ 1 1 0 | £ 3 12 0 |
| Cabbage, Savoy | 2 | 0 0 3 | 0 7 0 | 1 5 0 |
| Red Cabbage | 2 | 0 0 3 | 0 7 0 | 1 4 0 |
| Cauliflowers | 2 | 0 1 0 | 0 7 0 | 1 12 0 |
| Broad Beans | 2 | 0 2 0 | 0 0 0 | 1 0 0 |
| Early Peas | 6 | 0 6 0 | 1 1 0 | 2 8 0 |
| Late Peas | 2 | 0 2 0 | 0 7 0 | 0 16 0 |
| Carrots | 1 | 0 0 6 | 0 0 0 | 0 10 0 |
| Leeks | 10½ | 0 0 6 | 0 2 6 | 0 7 0 |
| Lettuce | 1 | 0 0 6 | 0 2 6 | 0 10 0 |
| Onions | 6 | 0 6 0 | 1 1 0 | 3 0 0 |
| Parsnips | 1 | 0 0 3 | 0 0 0 | 0 10 0 |
| Radishes | 1½ | 0 0 6 | 0 0 0 | 0 14 0 |
| Early Rhubarb | 2 | 0 0 0 | 1 0 0 | 2 0 0 |
| Late Rhubarb | 1 | 0 0 0 | 0 10 0 | 0 15 0 |
| Early Turnips | 1 | 0 0 2 | 0 0 0 | 0 5 0 |
| Strawberries | 3 | 0 0 0 | 0 14 0 | 3 0 0 |
| Raspberries | 2 | 0 0 0 | 0 7 0 | 1 10 0 |
| Gooseberries and Currants | 2 | 0 0 0 | 0 14 0 | 0 12 0 |
| Broccoli Plants | 2 | 0 2 0 | 0 0 0 | 1 0 0 |
| Cauliflower and Savoy Plants | 2 | 0 3 0 | 0 0 0 | 1 0 0 |
| Early Ashleaf Potatoes | 10 | 1 5 0 | 0 0 0 | 5 0 0 |
| Other Early Sorts | 14 | 1 8 0 | 0 0 0 | 5 0 0 |
| | 72 | 3 18 5 | 8 0 0 | 37 10 0 |

SECOND CROP.

| | | | | |
|--|------|-------|--------|---------|
| Cabbage Plants after Second Potatoes | 4 | 0 2 0 | 0 14 0 | 3 0 0 |
| Cauliflower after ditto | 5 | 0 0 0 | 1 1 0 | 3 0 0 |
| Savoy after ditto | 5 | 0 0 0 | 1 1 0 | 2 10 0 |
| Mangold Wurtzel after Cabbage | 6 | 0 0 6 | 0 0 0 | 1 10 0 |
| Celery Plants after Radishes | 1½ | 0 1 0 | 0 7 0 | 1 4 0 |
| Celery after Early Potatoes | 6 | 0 0 0 | 0 18 0 | 6 10 0 |
| Turnips after ditto | 4 | 0 0 6 | 0 3 0 | 1 0 0 |
| Broccoli after Early Peas | 4 | 0 0 0 | 0 0 0 | 1 0 0 |
| Turnips after ditto | 2 | 0 0 2 | 0 0 0 | 0 10 0 |
| Total | 109½ | 4 2 7 | 12 4 0 | 57 4 0 |
| Deduct | | | | 16 6 7 |
| Profit | | | | 40 17 5 |

You will see that I have said nothing about rent. I never look to the crops for rent myself. I always look into the pigsty, as I have plenty of keep for pigs that cost me very little; and you must understand that the cost of manure will never be so great again, as you will make a large quantity if you follow my advice.

I have set down £12 4s. for manure. This is to show you about what quantity I should use. It costs me 7s. per ton, delivered. I never lay out more than £3 besides for bone manure and guano, which cost me about £2 per year. These are the best manures for a second crop. You will see I have only set down 18s. cost of manure for six rods of Celery. This is to be bone manure, about one pound to the yard, to be dug in the bottom of the trench like farmyard manure. For Turnips after Potatoes I always use guano, sowing it on the ground, and digging it in.

I have set down £1 1s. for manure for Cauliflowers after Potatoes. This is for farmyard manure. This is to get the land into good heart for the next crop, otherwise I do not use it for second crops, as I can grow better crops of Cauliflower from guano at about one-half the cost. Sow it on the land and dig it in.

You will see I have set down 14s. for manure for Gooseberries and Currants. This will not be wanted after the first year. So that manure will not after that time cost more than £5 per year, and the crops, too, will be worth more money.—THOS. JONES.

(To be continued.)

PINE APPLE LEAVES DISFIGURED.

It may be interesting to you, and your subscriber who complains of the injured Pine Apple leaves in last week's Number, at page 239, to have any opinion so as to assist in ascertaining the cause. I here note mine, but with due respect to the answer given him. From what he describes, I think it was a sudden spurt of too much flue heat given in the past severe weather. If his Pines had not been accustomed to much fire heat, and he had to apply strong fires to keep them safe from frost, they would be the easier affected. Probably, he finds the leaves that stand off horizontally affected more than those upright in the centre of the plant. He may be able to say that his flues are in sound order; yet, that is not a guarantee for the prevention, as hot-water pipes, if worked by a smart boiler, have the same power but in a milder form. If your subscriber has the means at hand he may try to satisfy himself, by taking a healthy plant from a pit that is heated with fermenting materials and low temperature, and place it in the hottest end of a stove where a strong fire heat is kept up; in which case, the extreme sudden change would, in all probability, cause a similar injury as that which he describes. Pine Apple leaves that have suffered from cold or frost, I never observed to turn brown, but always white or yellowish-white.—
A. McKELVIE, *Stevenstone*.

A PACKET OF SEEDS SAVED BY AN OLD GARDENER,*

THE LATE MR. EDWARD BECK.

A MOUENFUL interest attaches itself to the publication of this re-issue of a very clever and witty jeu d'esprit, inasmuch as, when it was passing through the press, its lamented author had passed away from this earthly scene to that land which during his lifetime he had ever kept in view; and in EDWARD BECK the floricultural world mourns over one who, whether as a man or as a florist, was an honour to the craft to which he was so warmly attached. With him religion was no matter of mere creed, but a moving principle of everyday life; and though far removed from him in my views (as a clergyman of the Church of England), both in matters of church discipline and belief, yet one has, I hope, charity enough to honour a real love of truth, though it be in the sombre garb and quaint phraseology of the Quaker. All who knew him will, I believe, recognise in the statements of this book the impression of his own character. His shrewd and accurate knowledge of human nature, his appreciation of the salient points and difficulties of any position, his rigid demand for unquestioning submission to his orders, and at the same time the kindness with which he entered into the wants of those whom he employed, are manifest in the portrait he draws of the squire, no less than are the energy of his character and the religious convictions which ever guided him in life.

To the horticultural world Mr. Beck was known best as a successful exhibitor of Pelargoniums and a raiser of new seedlings. He commenced their growth as an amateur; but the natural energy of his character, which made him do thoroughly whatever he did at all, led him on so far that he passed as an exhibitor from the class of amateurs to that of growers for sale, and it became a matter of business as well as recreation. The floricultural world was the gainer; for he quite set an example by the tidy manner in which his plants were sent out, and by giving only such stuff as really was creditable. Of course, some kinds would be better growers than others, but each plant sent out was good of its kind; and I well remember the astonishment which a nurseryman in Dublin, who had been in the habit of receiving plants, continually expressed when his first basket from Isleworth was opened. Of late years he had again become the amateur, his former gardener becoming a prosperous nurseryman in the neighbourhood; and, consequently, the amount of glass which he used was considerably diminished. He still, however, continued to raise seedlings, and year after year shared with Messrs. Forster and Hoyle the honour of introducing new varieties to the public; and while his Refulgent, Fairest of the Fair, The Bride, Meteora, Sappho, and others of older date still bear their names on the scroll of established favourites, some newer ones make their appearance for the first time. Amongst them is one "The Gem of Roses," which, though it may not meet all the requirements of the florist, will, owing to

its great refinement and its pleasing tint of colour, be a favourite with the general public, and even more so than many more highly extolled flowers. Such, I believe, was its raiser's own estimation of it; and although, like many men, he often erred in judgment, looking upon his own children as prettier and better than they really were, yet he never wilfully declared that to be good which he knew or believed to be bad.

The experience of one naturally shrewd and observing, and who had the opportunities of which as a sailor, captain of a merchant ship, and large employer of labour he enjoyed (for such successively was Mr. Beck), could not but be large and valuable; and some of that experience he has embodied in the interesting little book the title of which heads this article, and which appeared originally in the "Florist," a periodical at one time under his able and wise management. Under the fictitious autobiography of a gardener of the old school, he gives us his ideas of what a good gardener ought to be and what a bad one is; and those who are writing and saying a great deal about the education of gardeners would derive no little advantage from the perusal of this volume, which, in a quaint, homely, and touching style, expresses doubtless his views on the point.

He lays as the foundation of all excellence in this, as in every other calling, that a man should have his heart in the work: without that, all the education, cramming, and high pressure you may put on will never make a man a gardener. He describes with considerable pathos and truth the buffetings that a gardener's boy, if he wishes to keep steady, often has to put up with; and the difficulties of coming in a new place, where all has been neglected, and where the different classes of servants are more ready to annoy than to help. Hear what he says of two classes—"I've noticed all my life that horses seem to spoil anybody that has much to do with them, whether master or man." And again, "Then look at Mr. Keeper. If the tenants didn't please him they couldn't call their farms their own; for he'd watch for some flaw about 'em as he'd watch for a poacher, and he'd have 'em out by hook or by crook." These dangers he gets over by his good nature; but the same quality drew him into another, the curse and ruin of many a promising man—public house frequenting. He nearly loses his place by this, but is kept by his master's kindness; though he ultimately is turned off for refusing to obey the squire's orders. I know how just his remarks on this subject are, how many men disgust their employers by insisting on having their own way. It may be very true that a gardener knows a great deal more than his employer about his craft; but if a master says, "Cut off all the heads of those standard Roses," or, "Give those Peach-houses a night's frost," a gardener may respectfully show the result; but if it is still insisted on he must do it. But it is not only the Employed but the Employer that the "Old Gardener" has his word for; as he says, "I've tossed the caps down, let every master and man wear the one that fits him." The negligence too often exhibited of the simplest wants and comforts of the men, the miserable holes in which at times they are put to inhabit, the management—or rather mismanagement of country exhibitions, the little petty jealousies too often engendered, and then the contrast in the grand and imposing display of a metropolitan show, are also very clearly touched upon. In fact, there is hardly a subject that bears on the position of either the gardener or his squire which is not touched with the sharp and caustic, but withal kindly, pen of the writer; and in the present day, when so much is said about learning, high education, and competitive examinations, it is a refreshing thing to turn to a little book like this, so redolent of that most valuable quality—good, plain, common sense. It would be a good thing if every country gentleman would read, and, if need be, profit by this book, and give a copy to his gardener—that is, if he means to abide by what it says of his duties as well as those of his gardener.

Who can doubt, that in the concluding chapter in which he addresses his brother gardeners on the value of "THE BOOK" itself, he dwells on that which had been the guiding star of his own life? "Now, what I want us all to do is, to read this Book just as we read the gardening ones, and while we work away in our gardens abide by its calendar of operations for working at the heart." And, again: "It'll make you respectful to your employers, and will get you respect from them; and when you've roughed it through life—and I've known what it is to rough it well as any of you—it will give you a hope that'll grow stronger and stronger the older you grow."

The last days of Edward Beck corresponded with his previous

* A Packet of Seeds saved by an Old Gardener. Second edition. London: Chapman & Hall.

life, and we cannot but feel that there was something prophetic of his own departure when in the preliminary chapter he describes the squire's deathbed scene. "He gently waved his hand in farewell to us all, and immediately, his countenance assuming a look of reverent surprise, departed for a better world." As one looks on the life and death of such a man, however we may differ on some points, knowing his love to his Saviour, may we all say, as it is recorded that a Romish priest once said, as standing by the open grave, when in a period of wars and tumults they were committing to its resting place the body of the saintly Bedell, Bishop of Kilmore, "Oh, sit anima mea cum eo!" or, in the words of THE BOOK, "May my latter end be like his."—D.

LISTS OF CHRYSANTHEMUMS.

MR. BEATON asks, in THE COTTAGE GARDENER of the 11th of December, for a list of twelve best late varieties of large Chrysanthemums. I now offer a list of a few late and early sorts, all incurved and fine show varieties. Those twenty-four varieties exhibitors never should be without.

TWELVE LATE SORTS.

- | | |
|---|---|
| 1. Aregina, amaranth. | 6. Beauty, peach blush. |
| 2. General Hardinge, Indian red and gold. | 7. King, light peach. |
| 3. Nonpareil, rosy lilac. | 8. Themis, fine rose. |
| 4. Pictorum roseum, dark rosy salmon. | 9. Plutus, fine golden yellow. |
| 5. Yellow Perfection, golden yellow. (This flower is far superior to Plutus.) | 10. Two-coloured Incurved, orange and salmon. |
| | 11. Dupont de l'Eure, orange and carmine. |
| | 12. Fabius, orange and salmon. |

TWELVE EARLY SORTS, all incurved, and splendid show-flowers.

- | | |
|--|---|
| 1. Queen of England, fine blush. (One of the finest flowers ever known; and I hope to show a fine stand of it at the Royal Horticultural Society's Exhibition early in Nov. next.) | 5. Yellow Formosum. |
| 2. Alfred Salter, delicate pink. (A most beautiful flower, and companion to the Queen.) | 6. Princess Marie, fine rose. |
| 3. Formosum, pale sulphur. | 7. Stellaris Globosa, carmine, crimson and white. |
| 4. Novelty, a French white. (This is acknowledged to be the finest flower ever sent out.) | 8. Cassandra, mottled white. (Very fine.) |
| | 9. Madame Lebois, delicate pink. |
| | 10. Hermione, blush tipped with purple. |
| | 11. Pio Nono, Indian red and gold. |
| | 12. Maréchal Duroc, fine rose. |

A FEW SORTS THAT MAKE FINE SPECIMEN PLANTS.

- | | |
|---|---|
| 1. Alma, rosy purple. (Very fine.) | 9. Prince Albert, bright crimson. |
| 2. Bouquet des Fleurs, red and crimson. | 10. Madame Poggi, dark crimson. |
| 3. Plutus, golden yellow. | 11. Vesta, white. (Very fine.) |
| 4. Comet, bronze, gold, and orange. | 12. Beauté du Nord, rosy crimson. |
| 5. Clipper, carmine and gold. | 13. Christine, peach. |
| 6. Dr. Maclean, rosy purple. | 14. Golden Christine. |
| 7. Progne, violet carmine. | 15. Madame Cammerson, crimson and gold. |
| 8. Julie Lagravère, dark velvety crimson. | 16. Cloth of Gold. |

I have had the following sorts in bloom throughout December and part of January.

- | | |
|--------------------------------------|--|
| Alma, rosy purple. (Very fine.) | Julie Lagravère, dark velvety crimson. |
| Wonderful, carmine and crimson. | Elizabeth, pure white. (This flower is now in bloom, and I shall gather five or six dozen flowers on Friday next.) |
| Bouquet des Fleurs, red and crimson. | |
| Progne, violet carmine. | |
| Themis, fine rose. | |

—J. H. BIRD, F.R.H.S.

HINTS TO GARDENERS.

(Continued from page 240.)

In my former paper I hinted that it would be wise if head gardeners would not take so many young men to train them for becoming head gardeners; and, also, that it would be advisable, in the overstocked market, if a part of the present race of gardeners were to emigrate to suitable countries, in order both to improve their own prospects of obtaining a livelihood and storing up something for old age or a rainy day, and by so doing to mend the position and prospects of those left at home.

I hinted at those two ways of improving the condition of my brethren, and propose now to consider a third way—viz., that of changing their trade or profession, and adopting some other that is, perhaps, better paid, or, at least, not so overstocked as that of gardening. Now, it strikes me that farming is a business that any clever gardener might enter upon with every prospect of succeeding therein; for gardening in the open ground is farming on a small scale, and a man that thoroughly understands how to

make the most of a garden will easily enter into, and carry out well, the larger and more extensive operations of the farm. He fully believes in the necessity and great value of rotation crops, the use of fertilisers suitable for the various products and various soils of the farm, the best modes of sowing seeds, and the giving to each plant its fair share of nutriment and space so as to give the greatest yield. He will understand the great injury that accrues to the farm from allowing weeds to produce seeds, not only amongst the crops, but also from waste headlands or hedgerows. He will avoid the great evil of allowing hedgerow timber to shade the ground too much; and will improve the hedges themselves, either by replanting where they are bad, or keeping such as are tolerable in good order. The only difficulty he would encounter would be that of managing stock—that is, cattle; but even that his orderly mind would soon learn.

Taking these hints into consideration, I think we may come to a conclusion that a gardener would very soon make an excellent farmer: indeed, there are many gardeners who at the present day combine the two pursuits, and are now gardeners and farm bailiffs. I for one, however, think this arrangement is not quite the thing; it would be much better for both departments if they were kept distinct.

Then, again, a gardener is a very proper person to be employed in forecraft—that is, the forming, planting, and after management of timber trees. He would be quite up to the mark in respect to understanding the right kinds of trees to plant in different soils and situations. By exercising the knowledge acquired in the garden he would avoid the many mistakes that have been, and indeed now are, happening in the forest lands of this empire: he would, indeed, train up a timber tree in the way it should go in order to become straight, firm, and good in the least time and space possible. This is a large field and now open, or, if not, it ought to be thrown open to such gardeners as are now out of situations; though I am sorry to say that too many proprietors of woods have the idea that any labourer of steady habits is fit to be made a forester—just as if it did not require as much knowledge to grow a good Oak, Ash, or Elm as it does to grow an Apple, a Pear, or a Peach tree. Place an intelligent gardener in a tract of woodland, with a sufficient number of labourers to assist him, he would soon make a great and visible improvement. In planting fresh ground he would first of all drain it well, if needful; then he would plant the right sort of trees in the right place, and he would plant them in such a manner as to insure rapid growth consistent with strength; and in due time he would attend to the best and earliest mode of pruning; and lastly, he would take care that they were thinned in time, keeping down underwood and weeds. Then, in the case of old neglected woods, he would direct his energies to bring them round into a thriving condition by draining, felling, and stubbing up old worthless trees, or cutting over such as were likely to send up young straight stools, to be thinned to one or two of the best to form trees of improved quality. Also, where fresh young trees can be planted, he would have good, wide, deep holes made early in autumn, and as soon as possible would procure healthy young trees to plant in them. By this judicious management, well followed up with thinning and pruning, an old, useless, ugly piece of forest would be thoroughly renovated, and would in time repay for the outlay.

Now, many of the forest lands belonging to the Crown are, or have been, in a bad state, and need a dozen or two gardeners placed over them to bring them into such a condition as would lead to the production of good sound timber for ship-building purposes—timber that would not decay like that used for the gunboats now condemned at Chatham or elsewhere.

Another change that might suit a gardener is that of becoming a foreman over a gang of navvies forming new railways. Such men, educated as they generally are, would be invaluable to large contractors. Educated men for such a purpose are far from being plentiful; and as railways are greatly on the increase, there can be but little fear that many gardeners now out of place would be employed if their wants and value were more known.

It is true that many gardeners have become foremen in nurseries and market gardens, some few curators of public gardens and parks; but I do not consider such men as having changed their profession—they are still gardeners, but have devoted themselves to particular branches of the business. Some few have saved money, and have commenced business as nursery, seedsmen, or market-gardeners. Such men have my hearty good wishes—I trust they will all do well.—T. APPLEBY.

(To be continued.)

TREES AND SHRUBS FOR PLANTING NEAR THE SEA.

I SHOULD be much obliged for a list of trees and hardy shrubs which will grow on the west coast of Ireland (or in a like situation), by the Atlantic, where the west wind prevails and shears off the top of trees and hedges in general. Those commonly recommended are *Pinus maritima* or Pineaster, *Pinus austriaca*, and Sycamore. The last I find grows very badly indeed. I am trying evergreen Oak (*Ilex*), and Turkey Oak; having heard of the first succeeding well in Cornwall, and having seen the latter preserving its erect growth where others lean away from the wind.

By-the-by, there must have been at one time (perhaps before the flood), a forest of some kind of Pine here, where no tree grows at present, on very exposed and high ground, and these trees appear to have been unaffected by the wind as far as erect growth. I have seen several, above thirty feet long, dug up here, perfectly straight, and in better soil, more sheltered. A part of a tree, supposed to be about two-thirds of it, measured 65 feet. The roots of these are always in their natural position, and still are firmly held in the ground, which, of course you understand, is peat. I have not seen the cones, but the bark is very thick. Has it been ascertained what these trees were? They are like *Pinus maritima*; or, if another Pine, is it to be inferred that they were a species which would not grow there now, on the supposition that the west wind, at

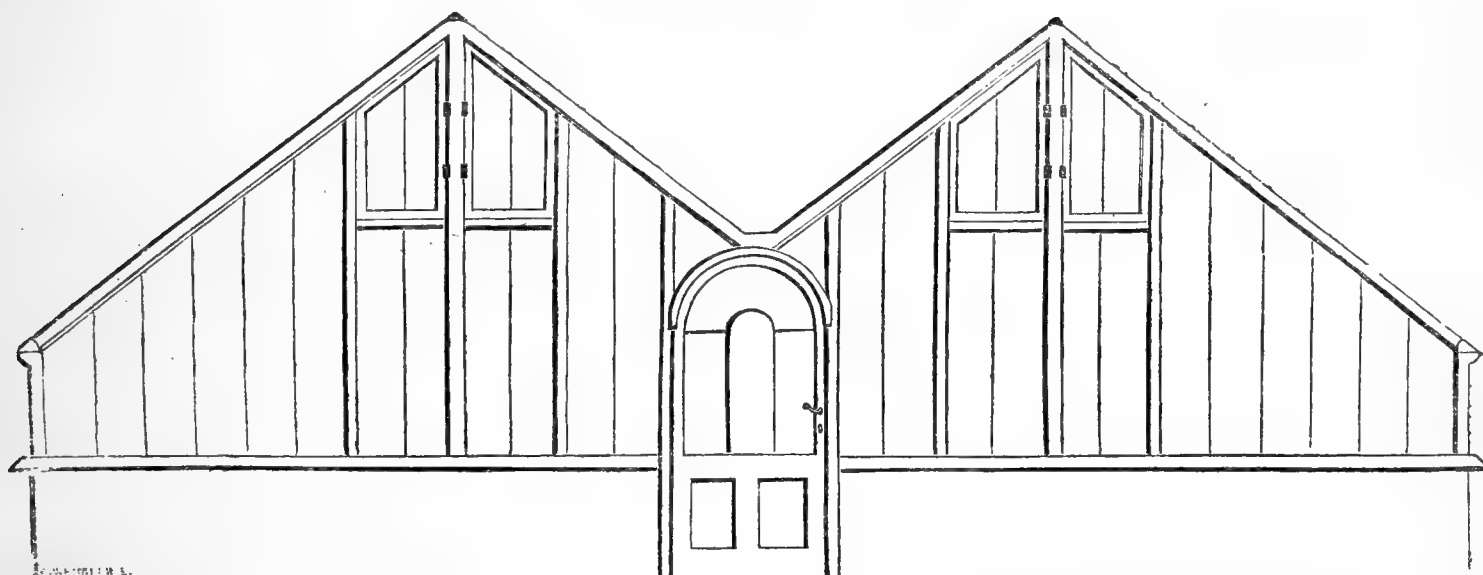
present so hostile to timber trees, did not prevail in their day?

I find Peaches growing and ripening here very near the sea in sheltered places? Would they grow in exposed positions and bear the breeze?—M. C. D.

The principal trees which are best known to stand against the sea breeze are the *Pinus maritima*, the Sea Buckthorn (*Hippophae rhamnoides*), the White Poplar (*Populus alba*), the White Beam tree (*Pyrus aria*), which is known to be less affected by exposure to high winds than any other tree. The Tamarisk flourishes as a shrub on our south coasts. The common Elder (*Sambucus nigra*), is the best nurse plant for plantations exposed to the sea breeze. The Sycamore (*Acer pseudo-platanus*), which you find not to answer, is yet a well-known tree to resist the sea breeze in many instances. But in many inland parts such trees and all others will not do in unfavourable soils. How much better, then, it ought to be, or be prepared nigh the coast. We should like information upon sea-side planting from such of our correspondents as reside on the west coast of the British Isles.

The British forests before the flood were of very different trees from the present race. The large trees you have seen dug up from the Irish bogs, and those which we ourselves have seen torn up from great depths by the floods in the highlands of Scotland, were all of the original *Pinus sylvestris*; the whole space of the soft or boggy land of these parts was once one mass of forest of this one species.]

A NEW ORCHARD-HOUSE.



5 1 1 1 01 5 FEET

As the subject of orchard-houses is now being discussed in the columns of your journal, I am induced to offer a short description of a simple, yet efficient, structure, the building and subsequent management of which came under my observation. It was erected at Montacute House, Somersetshire, for William Phelps, Esq., by Mr. Pridham, now of Sion Nursery, Croydon, who was then manager.

Having been erected in 1857, it is now stocked with fine healthy trees and Vines, and offers a combination of advantages for forwarding Strawberries, wintering plants for bedding, &c., not often met with. It is 55 feet in length, or together with the pinery attached of exactly the same dimensions, 110 feet by 28 feet wide. It has a base of nine-inch brickwork to the height of 2 feet, which, besides carrying plate for the uprights, affords a margin inside for the support of one edge of the stone slab, 3 feet wide, carried all round for plants, under which is a four-inch flow and return pipe, leading from the pinery or forcing-house.

The side sashes, which open continuously throughout, are hinged on their upper sides, and are each 3 feet deep by $3\frac{1}{2}$ feet wide, each being glazed with a single pane of sixteen-ounce sheet glass, and are opened by two movements by a double-action screw placed at one end, which works them on the parallel ruler principle.

The roof, which is fixed, forms a double span; the gable ends facing north and south, by which arrangement a very equable temperature is secured in summer, the sun's mid-day rays being refracted by the sash-bars of the roof, whilst the advantage of an early and late sun heat is obtained. The roof is supported by light iron columns, 8 feet apart, under the apex of each span, and iron arched bearers support the valley. These span the central walk, which is 3 feet wide, margined with a neat stone curb 9 inches high for a row of ornamental plants, and into which curb the iron supports are leaded. At the springing of the arches are holes drilled, 5 feet from the curb, into which is fixed a bracket for the support of Strawberry shelves; one for this purpose is also fixed on brackets near the glass at the two sides.

The glazing is of twenty-one-ounce best sheet glass in three-feet lengths by 12 inches wide. Abundant ventilation is afforded by the side sashes, which open simultaneously throughout, together with two opening sashes at the end of each span.

There are lights in the south, or forcing-house, end, and also large ones which open in the partition, giving the advantage of a quick circulation throughout.

Two lines of galvanised-wire trellis for Peaches and Nectarines are on each side of the secondary path, which is of Sweet Chestnut wood; the first being fixed to the iron columns that sup-

port the apex of the roof. The lower trellis is 4 feet from this, and helps to support the roof, there being no large rafters. A four feet space on each side of the centre walk is bricked off from the Peach-border for the roots of Grape Vines, which are trained round the central arches, and also horizontally along the lower part of the valley-side of the roof, the effect of which is exceedingly good when seen from the doorway.

There is also a path between the lower trellis and the stone bench, which, with the shelves, afford much space for wintering bedding and other plants, of which a large number are required.

This house would, of course, be equally suitable for fruit trees in pots. The drawing represents the end elevation.—G. E., Ford Abbey.

THE PRESENT WINTER AT DARLINGTON.

TAKEN at the gardens of Henry Pease, M.P., Pierremont, near Darlington, commencing December 17th, 1860, up to the 31st. The thermometer being an excellent upright self-registering one, 4 feet from the ground, on a proper stand in an open situation.

| | Minimum. | Max. | | Minimum. | Max. |
|------------------|----------|------|------------------|----------|------|
| | Deg. | Deg. | | Deg. | Deg. |
| December 17..... | 28 | 32 | December 25..... | —10 | 9 |
| „ 18..... | 21 | 28 | „ 26..... | —5 | 17 |
| „ 19..... | 17 | 26 | „ 27..... | 2 | 36 |
| „ 20..... | 19 | 31 | „ 28..... | 17 | 31 |
| „ 21..... | 14 | 32 | „ 29..... | —3 | 19 |
| „ 22..... | 22-24 | 29 | „ 30..... | 16 | 33 |
| „ 23..... | 11 | 30 | „ 31..... | 30 | 35 |
| „ 24..... | 4 | 18 | | | |

It commenced snowing here on the 17th, as above, at intervals up to the 22nd day, the snow being then to the depth of 1 foot 3 inches: consequently, all undergrowths had a good protection. Very different to that of the storm of 1837 and 1838—at least in the south of Scotland—the cover of snow being slight on that occasion: nevertheless, it was destructive to many shrubs, yet it is doubtful that even the present storm with its good cover will prove much more disastrous so far as is yet apparent. The common Portugal Laurel has lost its leaves. The variegated Hollies are much injured. Aucubas are cut down to the surface—in short, all the evergreen tribe of shrubs are more or less injured. Again, the summer's growth of the Peach tree on our walls is to all appearance destroyed.

But should a list of casualties be of any service to you, I should have much pleasure in forwarding the same for your perusal.

I beg to annex as follows my statement from January 1st, 1861, to the 17th, taken at Elenfield Gardens, here, the seat of Alfred Kitching, Esq.

| | Minimum. | Maximum. | Barometer. | |
|-----------------|----------|----------|------------|----------|
| | Deg. | Deg. | Morning. | Evening. |
| January 1 | 30 | 32 | 30.025 | 30.027 |
| „ 2 | 27 | 31 | 30.034 | 30.030 |
| „ 3 | 16 | 30 | 29.954 | 30.028 |
| „ 4 | 7 | 22 | 29.924 | 29.836 |
| „ 5 | 9 | 30 | 29.826 | 29.842 |
| „ 6 | 17 | 32 | 29.883 | 29.883 |
| „ 7 | 19 | 25 | 29.792 | 29.956 |
| „ 8 | —5 | 19 | 29.950 | 29.956 |
| „ 9 | 11 | 27 | 29.924 | 29.924 |
| „ 10 | 17 | 26 | 29.924 | 29.980 |
| „ 11 | 14 | 38 | 29.874 | 29.869 |
| „ 12 | 35 | 40 | 29.549 | 29.563 |
| „ 13 | 27 | 30 | 29.532 | 29.452 |
| „ 14 | 26 | 33 | 29.452 | 29.620 |
| „ 15 | 29 | 31 | 29.932 | 29.984 |
| „ 16 | 24 | 36 | 30.019 | 29.980 |
| „ 17 | 32 | 37 | 30.020 | 30.026 |

OBSERVATIONS.

- Jan. 1.—Slight snow until noon. Hazy afternoon. Wind N.E., S.E.
- 2.—Morning dull, with frost. Wind N.E.; evening N.
- 3.—Sharp frost all day; frosty at night. Wind N. and N.W.
- 4.—An intense frost all day. Wind W. and N.W.
- 5.—A mizzling snow until noon; dull evening. Wind N. and S.E.
- 6.—Heavy fall of snow. Evening light, with N. wind.
- 7.—Snow showers, with drift. Wind S.W.
- 8.—Very intense hoar frost during the day. Wind S. and S.W.
- 9.—Dense hoar frost; evening overcast. Wind S.W.
- 10.—Overcast and frosty throughout. Wind S.W.
- 11.—A partial thaw all day. Wind S.
- 12.—A fresh breeze until noon. Wind shifting.
- 13.—Hazy all day. Wind shifting.
- 14.—Overcast all day.
- 15.—Cold and cloudy all day.
- 16.—Slight mizzling showers. A partial thaw.
- 17.—Thaw all day. Wind W., N., and S.

It will be observed that on the morning of the eighth day the

thermometer registered 5° below zero, and on Christmas-day 10° below zero, and the following morning 5° below zero; again, on the 29th, 3° below zero.—ROBERT WILSON, Gardener.

POLMAISE HEATING.

I SHOULD be most willing to wait, as Mr. Beaton recommends, until the inventor of the new system of heating thinks proper to make himself not only known to the public, but also to state whether the description given is correct; but after carefully reading the very minute report, I think I am justified in stating that the plan is a good one, and may safely be carried out by any one wanting a healthy atmosphere either for greenhouse or hothouse purposes. I have had two such stoves at work between 1848 and 1859, they were built after the recommendation of the late D. B. Meek, the champion of Polmaise heating; but as one of your contributors (Mr. Robson) wrote opposing such system, and so many have advocated hot water in opposition, I have contented myself till now in being a looker-on.

Mr. Beaton's letter is evidently one to which we may expect a follower before long, and though this is not a "child of his own," he is willing in his enthusiastic manner to adopt it, as he does in other cases, when he thinks anything, either new or old, good and deserving public attention.

Mr. Beaton is, very properly, averse to anonymous writers: I, therefore, state I put up two stoves at Doward House, Whitchurch, Herefordshire, which are now in existence, though I have left the house after a residence of twenty-one years. The fires were frequently in for a month together, and never required making up after six or seven o'clock in the evening till six o'clock in the morning. I was always a great advocate for a large furnace, and did not find it consumed more coal, as it could be economised by a proper damper and ash-pit door. I have no experience in heating a larger building than my own span-roof 30 feet by 16 feet, 10 feet of which were glazed off as a hothouse, and only such heat allowed for the 20-feet greenhouse to exclude frost. Owing to the sudden descent of the ground the furnace was 7 feet or 8 feet below the floor of the greenhouse, which added, as I thought, great advantages to the working; for this circulation of hot air is precisely the same as takes place with hot water—the greater the elevation of the flow-pipe, the better and the greater the descent to the boiler, the more rapid circulation takes place.

I am desirous to hasten my remarks on this subject before the great unknown tells us his tale and his two years' experience. On the subject of economy of fuel, I can only say I used cinders, and small coal mixed; and though I sent nine miles into the Forest of Dean, each fire only costs 1s. 6d. a-week. The atmosphere was always most healthy. I built a tank over two feet of the flue, and always had warm water. I tried the iron plate, but being only three-quarters of an inch thick it cracked. I afterwards built a brick arch, which I greatly prefer. The furnace was on a four-inch-thick forest stone, supported on four brick pillars three bricks high, a nine-inch drain came from the floor of the greenhouse under the flagstone. The same sized drain conveyed the warm air into the greenhouse, previously heating the ten-feet hothouse. I should recommend Sylvester's doors without hinges or fastenings, as they can be regulated to a nicety. About four inches from the furnace I built a wall enclosing it and the return-flue, the damper being placed just as the flue left the chamber. The hot-air chamber was raised two bricks above the furnace, and covered over with flat house-tiles supported on iron bars. The circulation was most rapid. Tobacco lighted and placed at the mouth of the cold-air drain had to travel 20 feet at least, yet was almost instantly perceptible at the hot-air opening. This stove was built inside the house, and the flue could be cleaned by taking out a brick with a ring attached. The Cucumber-house had the stove built outside; and as I had to go down four steps to the furnace, and being too much on a level with the house, I never found the circulation so good.

Several other writers have formerly stated how well Polmaise had answered with them; for instances, Mr. Craddock, of Coventry, and Mr. Barham, of Hastings.

I do not think long cold-air drains necessary, as the cold will naturally draw to a warm-air opening, and descend any channel opened to it. Mr. Meek's stove was built very like what is now known as Rivers' brick-Arnott-stove, and, having built one in the centre of my dwelling-house, I can testify to

its doing its work well, and being the cheapest any one could build. Mr. Lane heated a large house with it without the addition of hot-water pipes. I have yet to learn any of the disadvantages with this plan. I still shall be most happy to see the plans carried out by the northern gardener alluded to. I enclose my name and present address, and shall be happy to give any one willing to build on this plan any further information.

In building all furnaces I strongly recommend a dead plate four or five inches wide in front of furnace-bars, it helps to coke the fresh coal, and keeps the door cool from having little or no draught near the door. A well-built flue might extend through the greenhouse, if it would be more convenient to carry it into the chimney at the farther end. My cold air entered not as Mr. Beaton mentions above the furnace, but just under the ash-pit. I certainly do not approve of having two chambers. The opening at the back of the ash-pit would draw in dust, and get clogged up with ashes. An opening might still be made above the furnace to try which answered best. My furnace was about 2 feet deep, 1 foot wide, and 1 foot high.—G. B. CULLERNE, 18, Kensington Crescent.

In the article on a "New System of Heating Plant-houses," in a recent Number, I find the following remark respecting Polmaise:—"After all, it was at last tacitly acknowledged that the application of the principle was on a baseless foundation."

I know not who makes this tacit acknowledgment, but pray permit me to say that it is not made by all. I have had Polmaise at work from very early days. At the present time I have three stoves on that principle in full operation, and the longer I use them the better I like them. Only secure your stove against the escape of gas; let the cold and hot-air drains be large, falling and rising rapidly—the more so the better, and Polmaise cannot fail to work well.

If it is desired to heat many houses by one fire, I think that hot water has the advantage over Polmaise, because I doubt whether it is possible to make the hot air from one stove circulate through many houses—as some might wish; but with two houses there is no difficulty at all, and, from my experience of Polmaise, I have no hesitation in saying that if I were about to build two vineries I should undoubtedly heat them on the Polmaise principle.

And now one word about "The New System of Heating Plant-houses." I do not see where this "new system" differs from the old system, in which hot air is introduced into many dwelling-houses by making the external air pass over a heated brick surface. In the case of plant-houses it seems to me to possess the disadvantages of Polmaise without its advantages. It is obvious that there is the same danger from escape of gas in both cases; while the new system does not secure that which is the great advantage of Polmaise—viz., the constant circulation of the air when every ventilator is closed.—W. C.

PLANTS AND POULTRY IN YORKSHIRE DURING THE PAST SEASON.

As you have often requested that the pages of THE COTTAGE GARDENER may be furnished with news from many quarters, I enclose a few facts from the West Riding. Last summer, though so cold and wet, Geranium cuttings struck well in a shady place under Beech trees. They could get plenty of air but no sun.

All the early cuttings of Verbenas, Heliotropes, &c., have done well and stood this winter. The cuttings taken later have damped off by scores. I took up a number of old Verbena plants, crammed them as tightly as possible into pots, did not put any drainage, placed them for a week or so in the shade, then housed them, and have not lost one. I took them up just before November last.

Cucumbers did well with a gentle, dry bottom heat, particularly Sion House—a most useful variety. I should be glad to hear if any other kind beats it. I have (January 21) some nice young plants in a frame, and they stand heat, cold, wet, or dryness better than any other variety I know. Of course, there are many kinds which I call "summer Cucumbers" superior.

Seedling Dahlias flowered better than tubers, with the exception of Crocus, they all made leaves to perfection. In the same way Sweet Peas turned out—very luxuriant in growth, but with

no flowers. Fuchsias bloomed well. Does that novelty Mrs. Storey always grow straggling? She is a sad flirt with me, and will not keep at all within bounds. I must give her up, if any one will tell me of another (as pretty, and which will submit to proper training), to take her place.

I have done with my poultry very much the same as THE COTTAGE GARDENER told us in last week-but-one's Number, during this very severe weather. I have given them (Brahma Pootras and Black Spanish mixed—not cross-bred though), Barley and bits from the house, soaked and given hot; and in return for which they lay eggs. Their house is roomy and very cold. They seldom came out during the very severe weather; and the only illness among them is with an old lady who suffers from rheumatism, to cure which I give a dozen peppercorns twice a week.

But to conclude. The great thing to have eggs in winter is to give plenty of warm food, and even warm water to drink, and if possible (during the time they are out) open the door of an outhouse for them to shelter in. I live on the top of a cold, flat, clay tract of land about the middle of the West Riding.—YORKSHIRE.

STOVE ORCHIDS.

(Continued from page 239.)

VANILLA PLANIFOLIA.—This is the plant that produces the far-famed perfume named, par excellence, Vanilla. In its native country, the West Indies, it climbs up the tallest trees, adhering to the stem and branches like our common Ivy, only its roots are ten times longer and stronger. I have cultivated it by first planting a young plant in a pot in the usual compost, and then nailing the long straggling shoots to the back wall of the Orchid-house, and keeping the wall moist during the growing season by syringing it and the plant every day. It grew very fast and sent forth numerous roots, which clung very tenaciously to the moist wall. In a year or two the shoots reached the top of the wall; I then trained them down the rafters, where they soon flowered and produced large bunches of their perfume-bearing pods. The same method of culture I found practised several years ago at Sion House, and with still more success, because the walls of the large tropical-house there were much loftier than the house I had under my care. The flowers themselves are large and handsome, of a yellowish-white colour, and the foliage is also large and of a rich dark green colour. I found the shade produced by the foliage was, during hot weather, beneficial to the plants underneath. As this plant is cheap enough it is worthy of culture, taking up no room and covering a naked wall with its large glossy leaves, and when old enough producing its fine flowers followed by clusters of its curious pods.

ÆRIDES, SACCOLABIUM AND VANDA.—These plants have no pseudo-bulbs, but only a rather woody stem clothed more or less densely with leaves; and these stems generally, if not always, send out strong roots. Bearing these facts in mind, the cultivator will at once perceive that they require more moisture than such species as have those reservoirs of life which are technically named pseudo-bulbs.

Notwithstanding this peculiarity, these Orchids require a season of growth, a season of rest and a season to flower. The season of growth should be from May to August; the season of rest from September to February; and the season of flowering from March to June. During the season of growth a strong heat should be kept up and the air kept saturated with moisture day and night. When the days begin to shorten fast, then induce a period of rest by reducing the heat and giving only just enough moisture to prevent the leaves from flagging. Growth will in consequence be in a great measure stopped, and the fluids condensed, and buds for flowering will be formed. Then, when the days begin to lengthen increase the heat, but with a very small amount of humidity. It is then the dry season of the tropics imitated; and by following this, as it were, thrice-divided treatment, the plants will flourish and flower abundantly. Too often Orchids are treated as if they required all the year a uniform condition of heat and moisture. When so treated they, it is true, grow constantly, but rarely produce flowers, because they are not allowed a season to form and perfect their flower-buds; and, besides that, they are kept too moist when the flowers are produced. Let the young cultivator then think what his plants require, and give them the treatment that is right, and I venture to predict he

will succeed both in growing and also obtain that which is the object of growth—abundance of flowers.

TREATMENT OF NEWLY-IMPORTED ORCHIDS.

There are many noblemen and gentlemen that have connections abroad, in countries where Orchids abound, and those friends send home large cases of Orchids. Collectors, also, for public gardens, and nurserymen when they meet with them, gather them and dispatch them to the parties who have sent them out for that purpose. I have seen, I might say, almost cartloads arrive and in a fair condition, but owing to mismanagement the greater part perished. I saw large patches of *Oncidium*, *Odontoglossum*, *Catesetum*, *Epidendra*, &c., arrive in good health sufficient to stock a Crystal Palace. In a very few months the whole, or nearly the whole, except a few miserable bits, were dead. They were laid on a platform kept very wet and in great heat—great mistakes, indeed, in my opinion.

Now, if any of our readers should be fortunate enough to import a lot of Orchids, the first thing they should do should be to cut away all and every part that is dead, then examine every part for insects, and use the proper methods to destroy them. Then for the upright-blooming species procure a number of flat logs and fasten the plants to them. Do not cut up the large specimens—fasten them on blocks just as they have arrived. If there are a number of small bits that are alive, I advise them all, or as many of them as may be convenient, to be tied to a round log of a considerable length. *Stanhopeas* when they are imported require a different treatment. I once received a large mass just as it had been torn off its native bed. I cleansed it and placed it upon a simple raft of rods large enough to hold it. I put no moss or compost about the pseudo-bulbs, only fixing a wire at each corner, and, drawing them together, I then formed a loop, and thereby suspended the mass and raft to the roof. A great number of new shoots soon made their appearance, and the year after several flowers were produced. It proved to be one of the best varieties of *Stanhopea tigrina*.

Till shoots and roots are produced, very little water should be given, and the heat should be rather below that given to established plants. It is a great mistake to give stimulants in liberal quantities to Orchids that have had a long journey, perhaps shut up in boxes or Wardian Cases, and arriving in a shrivelled-up condition. The treatment should be analogous to that given to a sick or half-starved animal—just enough at first to revive the dormant living power, and to induce, as it were, a gradual return to a healthy and growing state.

When fresh roots and new shoots are produced, then the imported plants may be potted, or put into baskets, or kept on the blocks just as the different species require. T. APPLEBY.

REPORT ON THE GARDEN PEAS,

GROWN AT CHISWICK DURING 1860.

By ROBERT HOGG, LL.D., F.R.H.S., Secretary to the Fruit Committee.

(Continued from page 232.)

8. Early Ringwood

SYN. *Ringwood Marrow* NOBLE COOPER & BOLTON.
Flanagan's Early FLANAGAN & SON.
Beck's Marrow BECK & CO.

Plant with a moderately vigorous habit of growth, 3½ to 4 feet high, not branching. The pods are single or in pairs, in about equal proportion; they are produced from within a foot of the ground at every joint even to the extremity, and contain from six to eight large Peas. Ripe seed white.

Sown February 19th, the plants bloomed May 31st, slatted June 16th, and the pods were ready to gather July 6th. The large well-filled pod, and the great prolificacy and earliness of this Pea, commend it as a useful variety in all establishments; but the pale colour of the pod, which is white instead of green, has acted as a great obstacle against its being extensively cultivated for market supplies. To those, however, who have no objection to this peculiarity, which does not in the least affect the merits of the Pea, it cannot fail to commend itself. This variety equals the *Early Frame* in earliness, and is much superior to it in quality; it also retains its tender marrowy character longer than most other varieties. Being an early Pea, and not Marrow, I have substituted the name *Early Ringwood* or that of *Ringwood Marrow*.

9. Early Frame HURST & M'MULLEN.

In adopting the name "*Early Frame*," I mean to include all the forms known under that name, whether they are called single or double-blossomed, for in fact there are none that are absolutely "single" or absolutely "double-blossomed." These expressions are not meant to indicate any peculiar structure of the flower as regards the number of the petals, but merely that the blossoms are produced singly or in pairs on the same peduncle. Great efforts have from time to time been made to preserve the single-blossomed character, and notwithstanding the care that has been bestowed upon the selection, growers have hitherto failed in rendering it permanent. There is, however, no real advantage to be obtained even if that character were secured, for the supposed earliness of the single-blossomed *Frame-Peas* is now far exceeded by other varieties that have been introduced of late years.

The variety I shall now describe under the name of *Early Frame* is one received from Messrs. Hurst & M'Mullen, under the name of *Marshall's Double-blossomed Frame*, a very excellent and carefully selected stock of *Early Frames*.

The plant is 3 to 4 feet high, and has a single stem of rather vigorous habit of growth, more stout and robust than that of *Early Emperor*, and bearing from nine to twelve pods, but frequently as many as fourteen. The pods are produced either singly or in pairs, and contain seven to eight Peas in each. The ripe seed is white. This is decidedly the best form of *Early Frame* I have met with. The seed was sown on the 19th of February, and the plants bloomed on June 1st; on the 18th of June the slats appeared, and the crop was ready for use on July 7th.

10. Early Warwick NOBLE COOPER & BOLTON.

SYN. *Race Horse*; *Essex Champion*.

What is now grown under the name of *Early Warwick* is very different from the variety to which the name was originally applied. When first obtained at Evesham in Warwickshire, it was a single-blossomed Pea, and somewhat earlier than the double-blossomed *Frame* of those days, but it gradually lost its single-blossomed character, and has now become identified with the ordinary *Early Frames*; the sample grown in the garden this season also proved to be the same.

11. Dickson's Favourite NOBLE COOPER & BOLTON.

SYN. *The Wonder* CHARLWOOD & CUMMINS.
Cotterell's Wonder FLANAGAN & SON.
Torwoodlee LAWSON & SON.

This seems to be a form of the *Auvergne*, but the plant has a more slender growth than that variety, and it is a day or two earlier. It grows from four to five feet high, with a single stem, and pale green foliage. The pods are produced in pairs, to the number of twelve or fourteen, and are curved, but not so much so as in the *Auvergne*, and contain from six to seven Peas in each. Ripe seed white.

Sown February 19th; bloomed June 9th; slatted June 20th, and the pods were ready to gather July 7th.

This is decidedly an inferior Pea to the *Auvergne*, which it resembles, and which produces long well-filled pods, containing from nine to twelve Peas each.

12. Bishop's Long-podded ... NOBLE COOPER & BOLTON.

SYN. *Bishop's Improved*.

The old *Bishop's Dwarf* is now entirely out of cultivation. It was a low-growing plant, 9 inches to a foot high, with a branching stem, and produced small insignificant pods 2½ inches long, and half an inch wide. Such a Pea is of no use in these days.

Bishop's Long-podded is a great improvement on the old variety. It grows about 2 feet high, produces numerous side branches, and bears from eighteen to twenty pods on a plant. The pods are either single or in pairs, and contain from seven to nine Peas in each. Ripe seed creamy white.

Sown February 19; bloomed May 30th; slatted June 20th, and the pods were ready to gather July 9th.

13. Auvergne NOBLE COOPER & BOLTON.

SYN. *White Sabre*; *White Scimitar*.

This is without doubt the best second early of the *Frame* class in cultivation. The plant is of moderately strong habit of growth, 4 to 5 feet high, and bears from 12 to 15 pods. The pods are generally single, and sometimes in pairs; when fully grown they are 4½ inches long, and over half an inch broad,

tapering towards the point, and very much curved. They contain from nine to twelve Peas, which are very closely compressed, and are of the size of Early Frames. Even the small pods contain seven to nine Peas in each. Ripe seed white. Sown February 19th; bloomed June 11th; slatted June 23rd, and the pods were ready July 10th.

14. Shilling's Grotto.....NOBLE COOPER & BOLTON.

The plant is of a strong habit of growth, always with a single stem, $4\frac{1}{2}$ to 5 feet high. The pods are generally single, but frequently in pairs, $3\frac{1}{2}$ inches long, and about half an inch wide, and containing on an average about seven large Peas. The ripe seed is white.

Sown February 19th; the plants were in bloom June 9th. The slats appeared on the 20th of June, and the pods were ready to gather July 10th.

It is nearly twenty years since this Pea was introduced, and at that time it was a decided acquisition, being a great improvement on the second early varieties then in cultivation. Since the introduction of Champion of England, Champion of Paris, Prize-taker, and several others to which it is certainly inferior, and which ripen at the same time, it may very well be dispensed with.

(To be continued.)

TO CORRESPONDENTS.

GAZANIA SPLENDENS (J. H.).—It is raised from cuttings. Its parentage and all we know about it were fully detailed in our columns a few weeks since.

CUCUMBERS (A very Old Subscriber).—For abundance of produce and moderate length, we should select Sion House Improved, Manchester Prize Improved, and Mills' Jewess.

ATMOSPHERIC MOISTURE (Young Beginner).—Mr. Fish's remarks on this subject are in our No. 587.

ANNUAL TO MATCH SAPONARIA CALABRICA ROSEA (Amateur).—There is no annual, or, indeed, any bedding plant that will exactly match any of the varieties of Saponaria calabrica, of which rosea is our own peculiar favourite. Sanvitalia procumbens comes the nearest to what you want, and the same treatment you give to Saponaria will do for the Sanvitalia, which is a yellow flower. By sowing both these hardy annuals at the end of March, in a slight heat, and treating the seedlings exactly as the little blue Lobelias, you could have them in bloom a month earlier than if they were sown in the open air like Mignonette—that is, you would have them in early in June. The Saponaria calabrica rosea is excessively pretty, and there is a rosy variety of Eucharidium grandiflorum quite as gay, and they come true from seeds. But the Eucharidiums, like Six-week Stocks, bloom only for six or seven weeks according to the season.

LAURUSTINUS BRANCHES KILLED BY THE FROST (C. V.).—Do not cut them down until they begin to break again in the coming spring; then cut them down quite to the surviving part. The offensive smell arising from Laurustinus we think must be the usual consequence of vegetable matter rendered putrescent by being frost-bitten. The foetid smell from a bed of thawed Cabbageworts is a familiar example.

BRITISH GRASSES (W. D. Paine).—You had better write to the publishers; we do not know anything about their intentions.

NAME OF PLANT (Twyside).—It is the *Pilea muscosa*. (M. C. D.).—The leaf is that of *Eryngium maritimum*. Of this there seems no reason to entertain any doubt; and therefore the description of the flowers must be an error. The flowers of *E. maritimum* are blue.

POULTRY AND BEE-KEEPER'S CHRONICLE.

POULTRY SHOWS.

JANUARY 30th and 31st. ULVERSTON. Secs., Mr. T. Robinson and Mr. J. Kitchen. Entries close January 19th.

FEBRUARY 13th and 14th. LIVERPOOL. (Poultry and Pigeons). Sec., Mr. A. Edmondson, 4, Dale Street. Entries close January 26.

MARCH 6th and 7th. PRESTON. Sec., Mr. H. P. Watson, Glover Street, Preston.

MARCH 13th and 14th. PLYMOUTH. Sec., Mr. W. R. Elliott, 5, Windsor Villas. Entries close March 1.

JUNE 4th, 5th, 6th, and 7th. BATH AND WEST OF ENGLAND.

N.B.—Secretaries will oblige us by sending early copies of their lists.

SPANISH FOWLS.

ALTHOUGH much has been said and written about the points and combs of Spanish fowls, yet the numerous queries we receive asking for information on the latter point prove there is still room for some remarks on them.

Many years since (about twenty) most of the cocks had combs which fell over as much as those of the hens; but it is a mistake to suppose they all did. There were then cocks with upright combs, and so much was this point prized by the Dutch, from whom they were all imported at that time, that many of the birds had all the serrations of their combs removed, and the operation was so freely performed that not more than one-third of them was left, and that was trimmed in the shape of the horn of the Cassowary.

There were then, as now, two sorts of falling combs—one, and

by far the oldest, was very thick at the base, and very large above. While the bird was almost a chicken, this became sore about half an inch from the base, the disease ate into the flesh till the comb fell over by its own weight. It then healed, and became firmly fixed down on the head. The other comb has in front what is called a thumb mark, being much such an indentation as would be made by the thumb if pressed into any substance that would retain the mark and form. This comb becomes oblique, turns away from the front of the head, twists just over the beak, and turns over behind. There is no limit to the eccentricities of shape these last assume, and no bird having the thumb mark should be bred from, unless the same rules and precautions be adopted that are followed by some Spangled Hamburg amateurs, who breed pullets from one strain and cocks from another. These thumb-marked birds throw beautiful pullets. The almost-universal prevalence of upright combs now proves that it is just as easy to breed them as it was to produce the awkward-looking birds we had formerly; and now while many are in doubt which of perhaps several excellent birds to take for stock, we advise a moderate-sized comb, thick at bottom, well over the nostril, and perfectly upright. The serrations not too deep, and the points blunt instead of sharp. A comb cannot be too red, but we warn our readers against being led away by that which is called a "fine texture" being a perfectly smooth and even skin. This is sure to fall in a greater or less degree; while the good, strong, but not coarse one, will not only keep upright itself, but will hand down the merit to its offspring.

Lest, however, it should be thought that none but perfect combs will be bred from those we recommend, we must give our readers notice that some cock chickens will be hatched, spite of every precaution and painstaking, that will show defective combs—some crooked, some plainly lying flat on the head when they are ten weeks old. We can only advise you to kill such at once. No more delicate chicken comes to table than a young Spanish.

THE CHANGE IN THE WEATHER.

If we in London find the luxury of a change in the weather, who have had but cold atmosphere and frozen pipes to complain of, what must be the rapture of those who have been snowed and frozen up in the country? Gardeners growling, poultrymen complaining, grooms ill-tempered, and the master of the house, if he happens to be a hunting man, a caged lion, and wanting to sell all his horses. Just as each succeeding frost makes matters worse, so the first genial thaw begins putting all to rights. Our pets, those with which we have most to do—the poultry—are behind. In many yards there are not only no chickens, but there are few layers, and no broody hens.

During the frost there has been no animal or insect life on the surface of the earth for them. Scratching has been impossible, and they have had no natural and self-found food. It will be long before the earth affords all they require, and, therefore, they must have every possible advantage. In garden operations there is often a barrowload of earth or mould that has never been frozen, this will be a boon. All the places that could not be cleaned out while frozen are now rummaged, and the sweepings of all these should go to the fowls. The food should for the next fortnight be as generous as it has been during the frost. Do not wait for large nests, but sit your hens as soon as you have nine eggs.

EFFECT OF FEEDING, ON THE COMB OF THE SPANISH COCK.

WILL you inform me if you think good feeding to Spanish fowls has a tendency to cause the comb in the cocks to fall, or will low diet cause the comb to become weaker, and, consequently, to fall over?—CHESHIRE.

[Over-feeding has a tendency to make the comb of a Spanish fowl grow to an inordinate size, but not to make it fall over. We this day publish a short paper on Spanish fowls, which may, perhaps, throw light on the subject. We should observe our opinion is, that feeding on meat is likely to cause a most undue development of comb, and although it may not fall over, yet it will be flaccid, and the points of the serrations will not be upright and firm.]

CRYSTAL PALACE EXHIBITION OF CANARIES, AND BRITISH AND FOREIGN CAGE BIRDS.

THIS commenced on the 26th, and will conclude on the 29th inst. There were about 320 cages of birds exhibited, and every class was well represented.

The Judges of Canaries were Mr. T. J. Willmore, A.R.A.; Mr. A. Willmore; and Mr. T. Moore. The Judge of British and Foreign Birds was Mr. W. Goodwin.

The following is a list of their awards:—

CLEAR YELLOW NORWICH.—First and Second, R. Mackley, Norwich. Very Highly Commended, T. Banfather, Bath House, St. Martin-at-Oak, Norwich; T. Madge, Norwich. Commended, J. Judd, Surrey; J. Rose, Norwich; W. Walter, Jury Street, Winchester; E. Hawkins, Bear Street, Leicester Square. (A very superior class.)

CLEAR BUFF NORWICH.—First, T. Madge, Norwich. Second, J. Holmes, Norwich. Very Highly Commended, R. Mackley, Norwich. Commended, E. Hawkins, Bear Street, Leicester Square. (A very superior class.)

CLEAR YELLOW BELGIAN.—First and Second, E. Hawkins, Leicester Square. Very Highly Commended, H. Marshall, Durham. Highly Commended, H. Marshall. Commended, W. Young, Oxford. (A good class.)

CLEAR BUFF BELGIAN.—First, R. Pearson, Durham. Second, E. Hawkins, Leicester Square. Very Highly Commended, H. Marshall, Durham.

VARIEGATED OR MARKED YELLOW BELGIAN.—First and Second, E. Hawkins. Very Highly Commended, W. Phillips, Nottingham. Commended, H. Marshall, Durham; W. Phillips. (A good class.)

VARIEGATED OR MARKED BUFF BELGIAN.—First, O. Nicholson, Fareham. Second, Dr. Palk, Southampton. Commended, H. Marshall, Durham; W. Phillips, Nottingham.

CLEAR YELLOW-CRESTED.—First, E. Hawkins. Second, J. Lingard, Ashton-under-Lyne.

CLEAR MEALY-CRESTED.—First, Second, and Highly Commended, E. Hawkins, Leicester Square.

SILVER-SPANGLED LIZARD.—First and Second, E. Hawkins. Very Highly Commended, T. Brown, Newington; J. Waller, Finsbury. Commended, T. Brown; W. Clark, Nottingham. (A good class.)

GOLDEN-SPANGLED LIZARD.—First, T. Brown, Newington. Second, E. Hawkins, Leicester Square. Very Highly Commended, J. Stevenson, Nottingham. Commended, W. Clark, Nottingham; E. Hawkins. (A very superior class.)

MEALY LONDON FANCY.—First, Second, and Third, J. Waller, Finsbury. Very Highly Commended, F. Hook, Walworth. Commended, J. Paice, 75, High Street, Borough. (A very superior class.)

JONQUE LONDON FANCY.—First and Second, J. Waller, Finsbury. Third, F. Hook, Walworth. Highly Commended, J. Paice; J. Waller, Finsbury. (A superior class.)

ANY OTHER VARIETY.—First, W. Laws, Norwich (Marked Yellow Norwich). Second, J. Holmes, Norwich (Marked Yellow Norwich). Extra Prize, H. Bayman (St Helen). Very Highly Commended, R. Mackley (Variegated Buff and Variegated Yellow Norwich). Highly Commended, C. Coles (Dove). W. Walter, Jewry Street, Winchester (Marked Crested Norwich).

MEALY GOLDFINCH MULE.—First, F. Hook, Walworth. Second, E. Hawkins, Leicester Square. Very Highly Commended, J. Stevenson, Nottingham. Highly Commended, T. Brown, Newington. (A good class.)

JONQUE GOLDFINCH MULE.—First, W. Walter, Winchester. Second, H. Marshall, Durham. Very Highly Commended, H. Marshall. Highly Commended, W. Arthur, Soho; H. Everton, Old Kent Road. (A good class.)

MEALY LINNET MULE.—First and Second, J. Lingard, Ashton-under-Lyne.

ANY OTHER VARIETY OF CANARY MULES.—First and Second, J. Judd, Newington Road, Surrey.

BRITISH BIRDS.

BULLFINCH.—First, E. W. Major, Old Kent Road. Very Highly Commended, G. Thoburn, Norwood. Highly Commended, E. Hawkins.

CHAFFINCH.—First, W. Young, Oxford. Highly Commended, Hon. A. B. Willoughby, Twickenham; E. W. Major, Old Kent Road.

GOLDFINCH.—First, J. Waller, Finsbury. Very Highly Commended, Hon. A. D. Willoughby, Twickenham; E. Dredge, Surrey Lodge, Penge. Highly Commended, J. Crew, Plumstead; E. Hawkins.

HAWFINCH.—Prize, E. W. Major, Old Kent Road.

CROSSBILL.—Prize, Hon. A. D. Willoughby, Twickenham.

LINNET.—First, J. Waller, Finsbury. Highly Commended, E. Hawkins; E. W. Major; N. H. Whitaker, Fitzroy Square. From the Hartz Mountains: pipes a tune from Der Freischütz, and very free in song—very rare.

SKYLARK.—First, E. Hawkins. Highly Commended, A. V. Brydon, Finsbury; J. Judd, Surrey.

ROBIN.—First, W. Young, Oxford.

BLACKBIRD.—First, H. Bayman, Penge. Very Highly Commended, W. Walter, Winchester. Highly Commended, W. Bicknell, Ebury Street, Belgravia.

SONG THRUSH.—First, C. Benham, Norwood. Highly Commended, A. Moore, Fareham, Hants; Mrs. Statham, 6, Park Terrace, Penge.

THRUSHES OF ANY OTHER VARIETY.—Prize, H. Bayman, Penge (Mease Thrush.)

STARLING.—Prize, H. Bayman, Penge.

MAGPIE.—Prize, J. Plumbe, Brixton.

JACKDAW.—Prize, E. Hawkins, Leicester Square.

ANY OTHER VARIETY OF BRITISH BIRDS.—Prize, Hon. A. D. Willoughby, Twickenham (Yellow Bullfinch). Prize, Miss I. Verner, Ryde, Isle of Wight (Pied Bullfinch). Prize, H. N. Whitaker, Fitzroy Square (Black Bullfinch). Very Highly Commended, E. Hawkins (Pair of white Doves); R. Pryer, Kensington (Black and White Blackbird). Highly Commended, Mrs. Dodd (White-breasted Blackbird); E. Hawkins.

HYBRIDS OR MULE BIRDS NOT CANARY MULES.—Very Highly Commended, E. Hawkins (Hybrid between Goldfinch Cock and Bullfinch Hen).

COLLECTIONS OF BRITISH BIRDS IN A CAGE OR AVIARY.—First, W. Bicknell, Ebury Street, Belgravia. Second, E. Hawkins.

NIGHTINGALE.—First, A. Harrington, Stratford, Essex.

SISKIN OR ABERDEVINE.—First, E. W. Major, Old Kent Road.

ANY OTHER VARIETY OF BIRDS OF PASSAGE AND MIGRATORY BIRDS.—Prize, W. Walter, Jewry Street, Winchester (Redpole).

GREY PARROTS.—Prize, Mrs. Statham. Says—Polly, pretty Polly! Who are you? You're a ro ue! What do you want? It's one o'clock. Calls Sarah, Sweep. Whistles and calls the dog Cato. Mews like a cat, and imitates other animals and birds. Sing Pop goes the Weasel, The Young Recruit, &c. Very Highly Commended, C. Decaisne, Norwood; F. G. Dutton, Gloucestershire. This bird barks, mews, and coughs; whistles Pop goes the Weasel, and another tune. Says Charlotte, John, Master Charles, Bustle, Puss, Polly, Pretty Polly; You Beauty; Scratch Polly's Pole; Shake a Paw; Scold Polly Not Scold Polly; Come along, Polly; Cocky come to Polly; You whistle, Polly, and then whistles; with other words too numerous to mention. It becomes very tame with its feeder, and when well treated learns with great ease and quickness. E. Hawkins, Leicester Square.

GREEN PARROTS.—Prize, A. Cantwell, St. Michael's Square, Southampton. Highly Commended, J. Rose, Norwich (Amazon); C. W. Wass, Norwood. Speaks plainly—Oh, poor old Lady! Calls Mary; Pretty Polly; sings, laughs, coughs, cries, crows, and whistles. Imitates birds, dogs, cats, and various other words and sounds. Mrs. Williams, Dulwich. Calls Mary, Hip, hip, hurrah; sings, whistles, laughs, imitates a bell ringing, &c.

ANY OTHER VARIETY OF LARGE PARROTS.—First, Miss E. A. Stevenson, Blackheath (South Sea Island Parrot). Second, W. W. Westbrook, Upper Norwood (Turon). Whistles the following tunes—Buy a Broom; Yankee Doodle; Pop goes the Weasel. Says—I'm pretty dear; Who are you? Polly wants a crust, be quick, &c. Very Highly Commended, Miss Young, Bromley (Australian Parrot).

LOVE BIRDS.—Prize, E. Hawkins.

AUSTRALIAN GRASS PARAKEETS.—Prize, H. N. Whitaker, 90, Charlotte Street, Fitzroy Square. Very Highly Commended, J. Judd, Surrey; Mrs. G. Richardson, Sydenham. Highly Commended, E. Hawkins.

RING-NECKED OR BENGAL PARAKEETS.—Prize, P. W. Dunaway. Very Highly Commended, Mrs. Williams, Dulwich. Says—Polly call the cat, then mews, and then says, Drive it away; Polly is a pretty creature, kiss Polly, Polly won't bite, pretty Polly, and several other words; will also whistle.

ANY OTHER VARIETY OF SMALL PARROTS OR PARAKEETS.—Prize, E. Hawkins (Turquoise Parakeets). Very Highly Commended, Miss E. A. Stevenson, Blackheath (Mealy—Rosselle Parrot of Sydney). Highly Commended, H. N. Whitaker, Fitzroy Square (New Parakeet).

KING PARROTS.—Prize, J. Judd, Surrey. Highly Commended, H. N. Whitaker, Fitzroy Square.

ROSEHILL PARAKEETS.—Prize, E. Hawkins, Leicester Square. Very Highly Commended, T. Gillespie, Croydon. Highly Commended, T. Gillespie.

PENNANT'S PARAKEET.—Prize, E. Hawkins. Highly Commended, J. Judd, Surrey.

RED-RUMP PARAKEETS.—Prize, J. Judd, Surrey.

COCKATEALS.—Prize, E. Hawkins.

COCKATOOS (Rose-breasted).—Prize, F. G. Dutton, Fairfield, Gloucestershire. Says—Pretty bird, pretty Joey. It is very tame and affectionate, and may be handled safely by any one. Very Highly Commended, J. Judd, Surrey. Highly Commended, E. Hawkins.

COCKATOOS (Sulphur or Lemon-Crested).—Prize, W. Emm, Watford, Herts. Highly Commended, Hon. A. D. Willoughby, Twickenham; S. Robinson, Sydenham. A good talker.

COCKATOOS (Rose, Salmon, or Orange-Crested).—Prize, E. Hawkins. Highly Commended, Hon. A. D. Willoughby, Twickenham.

COCKATOOS (Leadbeater's).—Prize, H. N. Whitaker, Fitzroy Square. Highly Commended, W. A. Cotton, 308, Oxford Street.

COCKATOO (Black or any other Variety).—Prize, E. Hawkins.

GRAND CHINESE LORIES.—Prize, E. Hawkins.

MACAW (Blue and Buff).—Prize, H. N. Whitaker, Fitzroy Square.

MACAW (any other variety).—Prize, I. Wilson, 4, Cold Harbour Place, Denmark Hill.

JAVA SPARROWS.—Prize, H. N. Whitaker. Highly Commended, E. Hawkins.

NONPAREILS.—Prize, E. Hawkins.

INDIGO BLUE BIRDS.—Prize, E. Hawkins.

WAX BILLS (any variety).—Prize, J. Judd, Surrey. Highly Commended, J. Judd.

VIRGINIAN NIGHTINGALES.—Prize, Hon. A. D. Willoughby, Twickenham.

PIPING CROWS OF AUSTRALIA.—Prize, H. Bayman, Penge.

ANY OTHER VARIETY OF FOREIGN BIRDS.—Prize, Hon. A. D. Willoughby, Twickenham (Blue Bullfinch, from Brazil, and Lonquor Myno, from Java). Prize, J. Judd, Surrey (Silver Bills).

GROUP OF FOREIGN BIRDS IN A CAGE OR AVIARY.—Prize, E. Hawkins, Leicester Square.

NATIONAL COLUMBARIAN SOCIETY'S ANNUAL SHOW.

THE annual grand Show of the National Columbarian Society was held this year at St. James' Hall on Tuesday last; their ordinary meeting room at Anderton's Hotel proving on the last anniversary to be inconveniently overcrowded.

The show of birds was very good, particularly in some classes. Mr. Potter exhibited three large pens of *Carriers* that fully sustained his reputation as being one of the first, if not the first, fancier of this valuable variety. It was to be regretted that Mr. Hayne did not show his stout birds, as, had he done so, such a collection would have resulted as was never before seen in one room. We cannot particularise many birds in Mr. Potter's collection of sixty or seventy, all of first-rate excellence; but we must not pass over a pair of Whites, inasmuch as they were for head, eye, beak, and wattle, the best we ever saw. Mr. Holmes showed some very superior Blues; and very good birds were also shown by Mr. Betty.

With *Pouters* the show was not numerously supplied, Messrs.

Hayne and Tegetmeier being the only exhibitors. The former showed some good Yellows and a very large-cropped Red cock. Mr. Tegetmeier also showed Reds of very good colour, and an extraordinary limbed young Mealy cock that measured over seven inches.

To prove that *Almonds* were well represented we need only state that the exhibitors were Messrs. Esquilant, Archer, Morris, Thomas, Holmes, and Freeman. The last gentleman exhibited a pen of eight *Almonds* and *Kites* bred from a pair during the last season, showing that with proper management really good birds may be bred in greater number than is generally supposed.

In *Owls* the show was fair, considering the great scarcity of really good short down-beaked birds. There is no difficulty in breeding *Owls* with the most beautiful plumage, but the characteristic head and beak of this exceedingly pretty variety are seldom seen in perfection. As the celebrated breeder, the late Sir John Sebright, said he could breed feather and colour quickly, but it would take him years to obtain head and beak. A little White Owl hen of Mr. Morris' was very nearly up to the standard.

The same gentleman and Mr. Thomas exhibited a very good collection of *Toys*, including numerous *Fantails*, *Turbits*, *Magpies*, and *Jacks*.

Mr. Jones' collection of Red and Dun *Barbs* was very good; they were mostly young birds, and as they grow older, and acquire fuller development will doubtless serve to maintain his reputation as a very successful exhibitor.

One of the most interesting pens in the room was that containing a pair of the celebrated *Passenger Pigeons* of North America, the bird whose migrations in countless thousands is so graphically described by Wilson in his American ornithology. They are small Dove-like birds, with a ruddy-brown plumage and long-pointed tails; their constant and restless pacings around their pen proved that their migratory instincts and wild undomesticated character remained unchanged by their confinement.

Taken as a whole the Show was exceedingly creditable to the young and evidently rising Society to which it owed its origin.

TAMING BIRDS.

I SHOULD be very much obliged to you if you could give me any information on the subject of taming birds. I have now a Goldfinch Mule which seems to possess an unusual amount of sagacity (if I may apply such a term to a bird). It has learnt to unfasten the door of its cage, and shows a great deal of perseverance in doing so; for I have seen it spend many hours in the attempt, and it rarely gives up till it has succeeded. It is also particularly fond of riding on the perch, which feat it accomplishes by resting one leg on the wires of the cage, the other on the perch, pulling the perch up in the air, and, then jumping on it, rides down. This process being followed for some time is generally ended by descent of the perch on the floor of the cage, about which it is dragged in the vain attempt to put it up again.

The bird is a young one, and was sold to me as a hen, but it makes great attempts at singing, which makes me think it must be a cock, though I know hens will sometimes sing. I think if I could tame the bird it would be a very amusing little creature. Any hints or suggestions on the subject through the medium of your paper would be very acceptable.—GOLDFINCH.

[I have scarcely any practical knowledge of the art of teaching birds to perform tricks. Perhaps if this catches the eye of any one that has, they may be kind enough to give "GOLDFINCH" some information. Curious accounts of performing birds have been recorded, but the method of training is not given. To tame the birds the cage should be hung low where persons are constantly passing; and when they become accustomed to the moving about of the public or household, they will soon be tame enough to take a hempseed from the fingers or lips, and by patience and gentleness may be rendered very docile and tractable. Perhaps "GOLDFINCH's" Goldfinch Mule, which seems to have a taste for riding, might be taught to ride on a little swinging-horse, by means of hempseed and patience.—B. P. B.]

VARIETIES OF RABBITS.

I HAVE been much interested in the various papers on Rabbits that have appeared in THE COTTAGE GARDENER of late, and look forward to the translation of the French work which has been mentioned.

Having been a Rabbit fancier off and on for many years, I send you a list of the different breeds or varieties known to me, as most likely others may like to compare notes, and describe those that they may have kept.

Eight different varieties, or distinct breeds of Rabbits, have come under my notice—namely:—

1st. The common English Wild Rabbit of a grey colour, and which are known as Warreners, Hedgehogs, and Sweethearts, according to their manner of living, and among them a white or black individual is occasionally met with.

2nd. The common domestic Rabbit, a middle-sized prick-eared animal, generally grey like the wild, but also occasionally partaking of the colours common to Rabbits. The prettiest sub-variety of this breed is, I think, the pure white with red eyes.

3rd. The silver-haired Rabbit, a long-established variety, of which there are two shades of colour or sub-varieties. The silver-haired *blacks*, or black Rabbits, profusely covered with white hairs, and the silver-haired *greys*, being grey Rabbits similarly adorned with white or silver hairs. This breed, I believe, originated in a cross between the wild and the tame, is of good size, with short, erect ears, and is hardy and prolific. They are valued on account of their skins, the fur of which somewhat resembles that of the Chinchilla, from which they are sometimes called Chinchilla Rabbits, and as I hear that fur is again coming into fashion no doubt a demand will again arise for their skins.

4th. The Ermine Rabbit, or white Rabbit with black points. This, like the preceding, is said originally to have been the produce of a cross between the wild and domesticated Rabbits. Like that it is of medium size, with short prick ears, and productive, a spot on the nose, the ears, the scut or tail, and all the four feet are black or nearly so, the remainder of the fur being pure unspotted white. The eyes are pinkish-white with red pupils. Their skins are valuable for making imitation ermine; but how they have come by the names of Himalayan or Chinese Rabbits I am at a loss to discover.

5th. The Fancy Lop-eared Rabbits. These are the pets of the fancy, and being more artificially reared are less robust. They are, however, large Rabbits, often weighing 10 lbs., and if properly kept are healthy animals. Their points are the length and breadth of the ears. They measure from 14 inches to 22 inches across from tip to tip. The next point is the lop or direction of the ears. These should fall down evenly one on each side of the head just behind the eyes, with the open or hollow side turned inwards or out of view; the head flat at top; the eye clear and prominent; the dewlap beneath the chin should be large, forming, as it were, a cushion for the head to rest on; the shoulders low, and the back high and arched.

As to colour they may be whole or self-coloured, as grey, sandy, sooty fawn, black or blue, or either of these colours pied with white in the following order:—The nose has a streak down it and a round patch on each side, which form the figure of a butterfly with expanded wings, and is called the Butterfly Smut. The eyes are also surrounded by a ring of colour like a pair of spectacles. The ears must be whole-coloured. The greater part of the back is also covered with a uniform patch called the saddle. From the ears to the saddle on each side of the neck is a line of small spots called the chain. The tail or scut is also coloured, and the remainder should be white, the dark patches must be regular and free from white, and the white parts as free from spots as possible.

They are designated Black Butterfly Smuts, or Blue Butterfly Smuts, according to colour. Those that have the nose and ears black and the back sandy are called Tortoiseshell Butterfly Smuts, and are much valued, provided they are good in all other properties.

6th. The Angora Rabbit. I believe this is the variety sometimes called Persian. They are the most beautiful of all the breeds of Rabbits, being pure white, and covered with a long, fleasy, silken coat. Their skins are also of much value, but they are not much known, the pure breed being scarce, and fetching a high price.

Particoloured cross-bred Rabbits with long coats commonly called French Rabbits, are not uncommon.

7th. The great Belgian Rabbits are the largest I am acquainted with. I believe they are scarce in this country. Those I had often weighed 15 lbs., in breeding condition. They were of two colours or sub-varieties. The more common were of a reddish-grey with black tips to the ears, which we called the Great Belgian Hare-coloured Rabbits; the others were of a bright

slaty blue without any other colour, very handsome, and more prized than the more common hare grey. These we called Ostend Blues, but I have had both colours from the same litter. I suppose these are what your correspondent calls Patagonians, I conclude, from their great size; but I do not think the name very appropriate.

8th. The last variety I am acquainted with is that which I kept as a boy in Germany, and is, I believe, the same lately mentioned as the Dutch Rabbits. They were rather small, healthy, hardy, and prolific, good eating, having a thick loin; generally whole-coloured, as grey, sandy, black, or blue, though not uncommon with one fore leg and shoulder white—sometimes the white formed a collar round the neck. I do not recollect seeing them of any other marking.

I have heard of Spanish and Russian Rabbits, but I do not know anything of them, or if they are at all different, or only other names for some of those already mentioned. Your correspondent who has been a Rabbit fancier for thirty years has the advantage of me, as he says he has kept ten different kinds. Will he oblige by describing those that I have omitted? and if any reader knows any kinds that I have not named, I should be pleased to have a description of them.—B. P. BRENT.

GUINEA PIGS.

I WAS rather astonished at the account of the precocity and fecundity of Guinea Pigs, as stated in THE COTTAGE GARDENER of January 22nd. I have kept and bred many Guinea Pigs at different times: I never recollect a sow breeding so young as two months. The period of gestation has puzzled me exceedingly. I am of the opinion that it varies much according to temperature; but mine went much nearer two months than three weeks. Mine have had from one to five young ones at a birth, though I remember a doe my father had many years back had seven or eight at a litter, but it nearly caused her death, and all the hair fell off her legs and stomach.—B. P. BRENT.

[The number of their litters, and the period of gestation are very powerfully influenced by the temperature in which the Guinea Pigs are kept. If their hutch is in a heated room, such as a stove or warm greenhouse, they multiply most rapidly, and at a much earlier age than if kept in a cold outhouse.—EDS.]

BEEES.

WHAT ought I to do (if anything can be done), with a common straw hive, a last year's swarm of good strength, in which within this week all the combs but one have been shaken down, and are lying in confusion on the floor-board, with the stored sugar drenching the board?

Can you tell me how the set of four octagon Stewarton hives are used? Are the three placed collaterally, and the super placed over the centre one?

Are bees found to work as well in frame-hives all glass, as in dark ones?—J. R. B.

[If your bees are still living you cannot do better than take advantage of the first fine and mild day to carry out the recommendations given in page 98 of our present volume.

Stewarton boxes are storifiers, and are not intended to be used collaterally.

Bees will work in the light if the direct rays of the sun are excluded; but it appears so contrary to their natural habits that we cannot believe they will do as well as in the darkness of an ordinary hive.

Poultry advertisements are 3s. 6d. for sixty words; and 6d. extra for every twelve words above that number.]

MR. HARRISON'S AMERICAN BOOK ON BEES.

It is to be regretted that any new publication should have the effect of lowering our estimation of the wonderful instinct of hive bees. Mr. Harrison, in his work, would seem to rob the bees of their virtues, and treats their instinct as entirely mechanical. He denies that the queen mother lays eggs in the royal cells, and seems to doubt whether she lays drone eggs!

It has been clearly proved by all the best writers and close observers that the queen mother lays the whole of the eggs in a hive, but at different periods of the breeding season, the eggs

of the males being laid last. The theory of Mr. Harrison reduces the hive bee to the level of wasps and humble bees, which late in the summer hatch females larger than the workers. These lay eggs; and neither of the last two insects lay up any store of honey, but remain dormant in the winter—the greatest part of them away from the original nest. During the swarming season, to show the homage paid to the queen by hive bees, frequently two queens leave the hive at the same time. The swarms separate, and assemble on different branches or places many yards apart, and might be hived separately, but often in too few numbers to make two good swarms; but, if united, one queen is selected.

Mr. Harrison is incorrect when he says that no sovereignty is exercised by the queen bee over the workers. He is wrong, also, when he declares that the entire economy of the colony is directed by the worker bees—the presence of the queen is necessary for other purposes than merely laying eggs. The time of laying eggs is not *entirely* controlled by the workers—the eggs are deposited by the queen in the royal cells; and it has been clearly proved that more homage is paid to the queen mother than that shown merely as the mother of the hive. The workers in traversing the combs never, on meeting the queen, walk over her person, as they do over that of a worker or a drone.

I will relate some more facts respecting the homage paid to the queen bee, particularly at the time of swarming.

The great homage paid to the queen mother of the hive at swarming is certainly most remarkable, as the workers will visit the branch of the tree, or any other spot on which the royal footsteps have trodden, for some days after. I do not agree with any writer who endeavours to lessen our admiration of the *adoration* paid to the mother bee: it has been immortalised in the Georgics of Virgil and other great writers up to this period. In the unicomb-hive, when the queen bee is traversing the combs, the moment she approaches the workers invariably turn their heads towards her, and *make way for her*. And how often have I seen a few faithful followers *on the ground* surrounding a queen when she has fallen short in swarming, from defective wings or otherwise, twenty-four hours after a swarm has issued and returned to the hive! Is this paying no more respect than what is mentioned by Mr. Harrison? The whole process of swarming abounds with that wonderful instinct and apparent attachment to the queen mother which so peculiarly stamp the hive bee.—H. W. NEWMAN, *Hillside, Cheltenham*.

OUR LETTER BOX.

BLACK ROT IN SPANISH—DEFICIENCY OF EGGS—NUMBER OF HENS FOR A COCKEREL (*J. R. B.*).—We know no disease in fowls called "*the blacks*." There is a malady to which Spanish are subject, which has been called the "Black Rot," and which is inevitably fatal. No other fowl ever has it. As you state the disease from which your fowls suffer derives its name from the colour of the head, we are disposed to believe they are suffering from indigestion, or frost, or they are crop-bound. The first and last may arise from improper food, or improper feeding. In both cases you must administer castor oil freely. If they are in moderate condition, they will, doubtless, lay now, and would have done so before but for the severity of the weather. Our own hatched in May have been laying the last six weeks. As a rule, eggs have been unusually scarce with every one. You must give castor oil every other day, and feed well on ground oats and bread and beer till the blackness has left the diseased birds. We answer your last question in the affirmative, four hens would be quite enough for one cockerel eight months old.

MOISTURE INSIDE A HEN-HOUSE (*Constant Reader, Manchester*).—After severe frost when a thaw arrives, there will always be an abundant deposition of moisture from the air within any room not heated. We see it constantly in the rooms and passages of dwelling-houses. If, however, the deposition of moisture continues in your hen-house, unless the weather also continues foggy and damp, it will be evidence that the soil is very wet and requires draining.

POULTRY BY RAILWAY (*H. H.*).—There was no fault with the Secretary of the Poultry Show at the Crystal Palace. The neglect was at the London Bridge station of the railway company. Any one who sustained a loss by such neglect should sue the company in the County Court.

BIRD-STUFFING (*J. Wilson*).—Capt. Brown's "*Taxidermist's Manual*," will suit you, probably.

RABBIT HUTCH (*C. A.*).—In our No. 431, you will find a drawing and directions for making one. In a few weeks more notes upon the subject will appear, in due course, in the work upon Rabbits which we have just commenced publishing.

RABBIT VARIETY (—).—We know a gentleman who would be glad to have the variety you mention. We shall readily obtain any information you need about birds, but cannot venture to recommend any fancier. Any gentleman's gardener would let you have a few cuttings, &c.; but it would not do for him to sell you seeds, &c. That would not be just, either to his master or to the trade. Your other questions will be answered next week. For full directions which you need, buy our "*Window-Gardening for the Many*."

WEEKLY CALENDAR.

| Day of M'nth | Day of Week. | FEBRUARY 5—11, 1861. | WEATHER NEAR LONDON IN 1860. | | | | Sun Rises. | Sun Sets. | Moon Rises and Sets | Moon's Age. | Clock before Sun. | Day of Year. |
|--------------|--------------|---------------------------------|------------------------------|-----------|-------|-----------------|------------|-----------|---------------------|-------------|-------------------|--------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | |
| | | | | deg. deg. | | | m. h. | m. h. | m. h. | | m. s. | |
| 5 | Tu | Arabis alpina. | 30.017—29.747 | 50—2 | W. | ·26 | 34 af 7 | 54 af 4 | 55 m 4 | 25 | 14 19 | 36 |
| 6 | W | Potentilla opaca. | 30.012—29.778 | 48—6 | N.W. | — | 33 7 | 56 4 | 44 5 | 26 | 14 23 | 37 |
| 6 | Th | Anemone apennina. | 30.180—29.874 | 48—0 | W. | ·02 | 31 7 | 58 4 | 20 6 | 27 | 14 27 | 38 |
| 7 | F | Saxifraga oppositifolia. | 29.712—29.523 | 52—1 | S.W. | ·06 | 29 7 | v. | 46 6 | 28 | 14 29 | 39 |
| 9 | S | Thlaspi alpestre. | 29.814—29.642 | 40—18 | N. | — | 27 7 | 2 5 | sets | ● | 14 31 | 40 |
| 10 | SUN | SHROVE SUNDAY. QUEEN VICT. | 30.045—29.980 | 37—15 | N. | — | 26 7 | 4 5 | 9 a 6 | 1 | 14 32 | 41 |
| 11 | M | Daphne collina. [MARRIED 1840.] | 29.916—29.728 | 38—14 | S. | — | 24 7 | 6 5 | 19 7 | 2 | 14 32 | 42 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 45.4° and 32.2° respectively. The greatest heat, 60°, occurred on the 9th, in 1856; and the lowest cold, —3°, on the 11th, in 1845. During the period 127 days were fine, and on 111 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

Artichokes (*Globe*), sow in heat, and transplant when fit into boxes; to be finally planted out in April on previously trenched and well-manured ground. By this means a supply of this vegetable can be had two months later than can be had from the old plants. *Basil*, sow in heat, as also *Marjoram* where such are required green. *Beans*, a sowing of Marshall's Prolific or Early Mazagan to be made in the open ground when the soil is sufficiently dry to work well. *Cauliflowers*, the plants in frames or under hand-lights to be divested of decayed leaves. Give them abundance of air in mild weather. *Celery*, sow for the main early crop in boxes; Seymour's is a good sort, and not so liable to run to seed as other kinds. *Lettuce*, remove dead leaves from those in frames. Give plenty of air. As soon as the young plants in boxes are an inch or two high prick them out in a moderate hotbed, to strengthen them for planting on a warm border next month. *Radishes*, sow the Early Frame on a warm sheltered border. *Sea-kale*, remove the covering from the portion that was forced early. Cut the stems short so as to keep them within the compass of a pot or box. *Shallots*, plant them, as also Garlic, if not done in the autumn.

FRUIT GARDEN.

Continue pruning and nailing wall trees until finished. Fork up the soil between the rows of Strawberry-beds, but not more than two inches deep, and mulch with rotten manure.

FLOWER GARDEN.

Prune, nail, and tie all kinds of hardy climbers, Roses, &c., before the more busy season arrives. In the absence of frost prune hardy Roses. If the removal of evergreens has been neglected, the opportunities of mild, moist days should be embraced to effect that purpose. Attend to the relaying of Pinks in the soil after having been thrown out by the frost. Biennials may be planted in beds or borders. See to the bulbous roots, and stir the surface around them.

STOVE.

All Orchids that are indicating a new growth to be re-shifted, making use of fibrous heath soil and some charcoal, both for drainage and for mixing amongst the soil, as it is used about them in the process of shifting them into new baskets or pots. A gentle increase of heat and humidity to be applied as the days lengthen and light strengthens. When water is necessary the best way to apply it is round the sides of the baskets or pots, as saturation of the soil around the collar would be most injurious. That poor persecuted, but most in-offensive, creature the toad is most useful here.

GREENHOUSE AND CONSERVATORY.

The mould intended for greenhouse plants to be prepared and sweetened by frequent turnings, and a sufficient supply for immediate use to be stored in an open

shed. See that Camellias are not allowed to get dry at the roots, or you will lose your buds; and do not expose them at any time to cutting currents of air. Young, vigorous New Holland plants to have all their strong shoots stopped in good time; attention to this is necessary for laying a foundation for future good specimens. Examine the Heaths, as they will soon begin to move. Remove all dead branches and rusty leaves, and stir the soil a little on the surface. *Tropæolums* will demand frequent attention in directing their young shoots.

FORCING-PIT.

Keep up the supply of American shrubs, Roses, Lily of the Valley, Dutch bulbs, &c., as the beauty of your greenhouse and conservatory will depend in a great measure upon them for some time to come. Keep up a bottom heat of 75°, and a top heat of 60° at night and 70° by day, with air occasionally.

PITS AND FRAMES.

Examine the stock for bedding out, and if there are heat and a proper place to put them into, pot off all kinds that are in store-pots. As the rays of the sun are now becoming more powerful, and plants starting into more active growth, watering must be carefully attended to: see that nothing is suffering for want of it.

W. KEANE.

DOINGS OF THE LAST WEEK.

As expected, the weather has continued mild and warm, feeling quite hot at 40° and 45°, after being used to a range between 7° and 20°. The cold-pits partly uncovered were wholly uncovered, and the plants examined. Cauliflowers, &c., found quite safe. Earth-pits with glass laid over them had suffered considerably in places, as some small openings had been inadvertently left between the rail at the back of the pit and the glass sash that was merely laid on it. Oh! these little matters. Some plants of *Gazania* taken up in the autumn and potted perished; little was left of the *Calceolaria amplexicaulis*; other *Calceolarias* had suffered more from damp than anything else, and, therefore, were cleaned of all the fading leaves, and will suffer but little for their five weeks' night. Cuttings put in in the beginning of November and only beginning to root, look as well as the day they were put in. Had they been established and growing freely, they, too, might have lost a few leaves. Some Scarlet Geraniums that had been lifted from the beds after they were a little frosted, looked all the worse for the long night; but as nearly all were sound at bottom, they were cut down within a couple of inches of their roots, and packed closely in a bed made with tree leaves in front of a Vine-border; temperature about 55°, being laid on sandy soil covered with a little more. A sprinkling of lime put over them to dry up the cuts, a little warm water to settle all nicely, and then an inch of dry sandy soil over all. Stools thus treated previously have supplied us with a forest of shoots, and many cuttings if we wanted them. A few Verbenas were injured a little from the damp, but, on the whole, we have suffered in this department but little, having little to regret except the *Calceolaria amplexicaulis*, which is a great favourite here, as it blooms early and continuously. For that we must either beg, borrow, or go without. With so little covering at command, we attribute its

safety so far to the changing and turning of that covering so often.

Out-of-doors Broccoli has been uncovered, leaving a branch just along the rows to break the force of the sun a little at first. Most of the heads so covered are all right. The branches along the rows of Cabbages have also been lifted off, and the ground forked over. A very few are injured, perhaps one in thirty, and these have been replaced. The branches have also been removed from Celery, and the slight covering on the surface; and although a few exposed leaves are injured, the plants will be none the worse for use. The evergreen branches have also been removed from the Strawberries, and I never saw them looking better. If a severe frost should set in again, and no snow should precede it, before the ground gets too hard, little twigs fifteen inches high or so will be stuck among the rows instead of merely laying them along the rows. These little matters may seem unimportant, but I look upon a good crop of fine Strawberries out of doors as of equal importance with early Green Peas and garden Beans. We have yet sown none of either Peas or Beans, but will soon sow out of doors for the second crop, and in-doors for the first.

Out of doors, well might "M. H. P." say all would be lamentation and woe. It was not the severity of the season merely, but the growing condition of the plants before the frost that has caused such fearful destruction. I expect sad reports of many ornamental trees that were previously considered hardy. Here (Luton), I expect every Laurustinus will have to be severely cut back in spring. There is no end to the losses among Roses. Even those against walls, though slightly protected, are greatly injured, and on walls or trellises; in beds I do not expect a single Rose of the China or Tea sections, with all their varieties, to live, unless they push afresh from the bottom. All above is thoroughly killed, though Figs with scarcely more protection seem little or nothing injured, only they had lost all their leaves long before the frost came. If such seasons as this and the last are to be expected, lifting or root-pruning in autumn will have to become common operations to get deciduous plants especially into an early state of rest.

Advantage has been taken of the thaw to lift some more roots of Sea-kale and Rhubarb, and place them in the Mushroom-house. After this time the large Rhubarbs—such as Victoria, &c., give the best returns. We had thought of putting in more Turnips for blanched Turnip-tops, but we found the tubers too frosted still. The Swede is the only one for this purpose. I planted another lot of Potatoes, just an inch or two sprung, into large Sea-kale pots, placing four sets in a pot, after filling it about half full, and allowing one shoot to each set or tuber. The Potatoes are then earthed up as they grow, and are kept anywhere in a little heat until the shoots are rising, when all the light possible is given. After trying Handsworth and many more for this purpose, we have fallen back for this and also chiefly for Frames on the old Ashleaved Kidney. The Mushroom-bed firmly beat down, having a nice heat about 85°, as warm as new milk, was spawned by inserting pieces about the size of a walnut every eight inches. The bed being firmly beat, and the heat continuing regular, the soil was put on but not beaten for a day or two to see how it would be. A fresh bed was made of manure turned and heated in a shed, beat and trod as hard as possible, and yet giving out heat enough to cause air to be given to keep down the temperature of the house, as the atmospheric heat should never be higher than from 55° to 60°, and nearer the former if the Mushrooms are to be thick and stubby. I find some people like the wafer-thin Mushrooms best. I dare say they are easiest cooked. Boringholes in such a hot Mushroom-bed is all very well when there is plenty of time to wait and wasting the material is no object. When that is a matter of moment, it is important to make it compact, so that the air being excluded continued active fermentation does not waste it too much. If there was room to dry horse-droppings, &c., sufficiently, without heating them more than to set the spawn going, the finer and fleshier would be the Mushrooms. At one time we used to put a thin plaster of cowdung over the surface of the bed before covering it with soil, and the small buttons were beautiful; but the large Mushrooms were too thick, fleshy, and firm, to be easily boiled or stewed. There may thus be too much of a good thing.

Among plants, propagating for bedding has begun earlier than usual. Store-pots of Verbenas have had one cutting consisting of two joints taken off all the points, which will cause the lower buds to come strong and let us have more in a fortnight's time.

All slips of any kind of bedding *Geraniums* that could be got hold of have also been made into a cutting—among others the Lady Plymouth variegated *Geranium*. I just mention it here to notice that the cuttings of this plant should neither be very wet nor covered with anything more than the glass of the house in which they stand in, or they will damp, and that the old plants when the cuttings are taken from them should be kept cool and rather dry. Keep them moist and warm, as in a forcing-house, and ten to one but they will get gouty and die.

Black Prince Strawberries in Vine-pit, in a temperature averaging 55°, are showing flower better than expected. Cucumbers have been potted each in a single small pot, and a few more sown. Large Pelargoniums have been tied out and taken to the greenhouse; later ones regulated, and a third lot stopped, and younger ones potted from four-inch to six-inch pots, and rooted cuttings potted into small 60's. Many variegated *Geraniums*, as Alma, Mangles', &c., have been taken from boxes and potted separately into small 60's, and set in a pit on a bed of leaves, just to give them a fair start; others have been placed on the stage of a vinery for a similar purpose. Cinerarias have had a slender stick put to them and been taken to the greenhouse, and to keep them cool have been set on moss. Watering, pot-washing, air-giving, and the general routine the same as last week.—R. F.

KIDD'S MODE OF HEATING BY HOT AIR.

To settle as we go is the surest way of keeping out of trouble, of keeping out of debt, and of keeping heads above water: then let me settle my account with the blowers of hot air and cold draughts in the same respirator. The surest sign of success in anything that is new or out of the common, is to see the zeal and anxiety of the grumblers about it. Without grumbling one could hardly get on a pair of new boots, and without grumbling a fixed star has not yet been discovered. We can no more do without the aid of the grumblers and cold water doctors than we can or ever could do without fires in winter. But I have made a discovery myself since the commencement of the new year, and I want also to hear what can be said for or against it.

There is an old way of firing cannons for fun for the boys at Christmas play, by leaving a little whisky at the bottom of a bottle, then setting the bottom of the bottle against the fire, the bottle being slightly or slackly corked, the steam is soon up in the bottle, away goes the cork with a bang, to the great delight and amusement of the youngsters. Well, being in that order of artillery at the late gathering, I made my discovery without even attempting anything of the kind.

Take a bottle, the biggest you can find, first fire off a cannon with it to make it clean and dry inside, let it cool till it is nearly cold, then cork it and seal the cork; set the bottle upright on the table, or lying down in a basket, or in any other position, and you will find by any common test that the air inside that corked bottle circulates as freely and just as it does all round us.

Therefore, the Polmaise was on a baseless or bottomless foundation after all our calling it so natural. Nature does not work her fancies by an over and an under current, as is the case in the bottomless-foundation system. Polmaise is on the principle of shifting the air on a principle which is directly against the laws of Nature, just as Mr. Penn's system was before it. He introduced the hot air at the top or highest point of the house, and sucked the under current on the level of the floor of the house. That was in 1836-7-8-9, at Lewisham. I met Mr. Penn's gardener then in a London nursery, and nothing could be more certain than in his full confidence in the working of that system. I sent Mr. Loudon after it, and he was soon of the same mind as the authors and workers of it, and most reading gardeners know the result.

Penn's system led to the discovery that a Scottish laird had been using the same principle on a different application at his place, called Polmaise, and Penn's

system went afterwards by the name of Polmaise. All we gardeners had gone astray, and confounded Polmaise with the workings of the wind out of doors; others who were not gardeners took up that notion, and fortunately there are some yet alive who can bear witness to this very fact, and who will insist on it to this present hour, that Polmaise, or an under and an upper current of air in a hothouse to keep it warm, is a better way of heating and airing hothouses than the way that has been in use by Nature from the foundation of the world, for heating and airing the earth, and all that come forth of it. But on a small scale fighting against Nature does not seem to be worth taking into account.

Mr. Rivers's brick ovens in the centre of his Rose-pits for forcing them, and for keeping them from cold and harm, as explained by himself, and Mr. Lane's plan on the same foundation, as Mr. Fish told us, are both on the principle of sucking back the under current to be reheated, and to return to the same work on a higher level, or Penn's system, or Polmaise on the mildest scale. And there is another corroboration of the fact by Mr. Cullerne, in *THE COTTAGE GARDENER* of last week, page 258, whose most practical observations on this way of heating I would earnestly advise every one who has a stake for burning things against, to consult over and over again, and then to go and do as he did and advises to do.

On a small scale, also, have all our hothouses been ventilated on the system of two currents—a top and bottom current. The Crystal Palace is on a large scale, and is not so aired—it comes a step nearer to Nature than we have been accustomed to practise. The only thing on which I had a doubt of all the things I said about the Kiddean system of heating, was the working of it upon the level, and I am sustained in that doubt by the experience of Mr. Cullerne with his Cucumber-house; but as his was partly Polmaise, his oven being inside, the experience arrived at by that means is not absolute, either for or against the working of the Kiddean on the level, and we want actual practice from outside ovens before we can safely rely on the level going in of heated air to keep a greenhouse warm.

Then, as to the invention of this new mode of heating, I doubt not but it is the oldest and the best one of all we know of since the beginning of the old flue to the commencement of the hot-water system; and Penn's and Polmaise were wrong deviations from a good beginning—which ended, however, on the very day it was first tried, owing to a private defect in the setting, and which defect could not be discovered without pulling a most complicated and very ponderous machinery to pieces. That was, probably, in the early days of George III., for whom the origin of the Kiddean system was erected and failed at the Stud House, Hampton Court. Every possessor of that Stud House, from then till now, had a fire and failure with that machinery. "Old King," who is just gone to his account, was gardener at the Stud House from his youth upwards, and as long as he could draw one leg after the other, and during his last illness the Marquis of Breadalbane allowed him his house and his usual emoluments under Mr. Kidd; but poor King could hardly tell of the origin of the great air, or hot-air vault, only that it was put up in the reign of George III., and that through all the changes of Governments since then, and with every new Master of the Horse Mr. King had to try to get the hot-air furnace in motion, and when he failed in such attempts, it was usual to call in some lecturer or scientific preacher of air-in-motion as it was and should be; but all such might have preached and practised as well on cold air as on hot, for go or come it would not, nor never did till Mr. Kidd resolved to fathom it to the bottom, or burn his fingers and toes in the attempt. Now that it is found out, and proved in practice, by one of our very best practical men, that the oldest idea of heating by hot air is better for plants and for man and beast than any of the suckers which have

been pulled from the root-stock of the original idea by Scotch lairds and English artists. And there it is and has been at work during the hardest weather we have experienced lately under the eye and direction of one of our best practical gardeners—Mr. Kidd.

As we are likely to be again engaged on a discussion of heating with warmed air, although the child is only an adopted one of mine, I cannot let slip a palpable error into which "W.C.," page 259, has fallen between two stools—between the Kiddean and the Polmaise systems, where he says the Polmaise has the advantage over the Kiddean—viz., "the constant circulation of the air when every ventilator is closed." That is entirely a great error. Cold air drawn from the inside of the house through the suction of the furnace, will cool the heat in the fireplace just as soon as the cold air from the source of Nature, from the open air admitted through the ventilators. As long as there is any heat in the brickwork the circulation will not cease in the Kiddean system; but it has been proved again and again, that the circulation of Polmaise did actually stop while the furnace was red hot—a thing which is simply an impossibility in the Kiddean system.

The only "disadvantage" in the two systems, therefore, is more liable to occur in the Polmaise. The escape of gas, or bad smell from the fire, is much more liable to occur in the Polmaise arrangement of the fireplace than in the other; indeed, with a common degree of care in building the fireplace and hot-air chamber, no gas or smell can get into the circulation of the Kiddean system. Like the old woman's salt, the air in the Kiddean system is always fresh and fresh, and there is nothing to get out of order in it. All the care should be expended before lighting the fire for the new and much more superior system of Mr. Kidd, and that care should be to have an ample fireplace, and a large air-chamber. That is the only secret from first to last. You can make a small fire in a large fireplace, just as they say in Scotland about preaching a sermon in the end of the kirk. Mr. Cullerne had his fireplaces large, and "the fires were frequently in for a month together, and never required making up after six or seven o'clock in the evening till six o'clock in the morning." Just think of that, and not nearly so many coals are burnt in this large fireplace as in the little cruets which nine-tenths of the economicals believe to be the best for their purpose; but which, indeed, are the most wasteful of all contrivances for the economical management of the products of combustion. In Herefordshire, where Mr. Cullerne practised this economy, they all bake their own bread in their large brick-ovens. They heat these ovens with all manner of wood-faggots in preference to coals, when they can get them; and I would always advise the fireplaces for all greenhouses to be made so large as to be able to burn wood and plenty of it, or any thing that will blaze away quickly—that is, the Kiddean fireplaces for such temporary work. Then when you saw a sudden turn in the weather before going to bed, and your own urgent need of the circulating medium against the frost, in with a handful of shavings or a whisp of straw, out with a lucifer and set it in a blaze, cut the tie-band of a faggot of brushwood, and fill the fireplace at the first feed, and the crackling of that one fire will warm your heart, and be sufficient to heat the brickwork in less time than I take to write out my idea of a comfortable fire on the spur of the moment. I, too, lived in Herefordshire, and fired away as if I had an oven. One year I cut down two acres of Apple trees there to burn in the furnaces of hothouses, and the old women predicted such a death for me, for cutting off so much of the "mercies of life"—so many hogsheads of cider, their favoured beverage—as King James' Privy Council prepared for the covenanters who murdered Bishop Sharp, of St. Andrews, if not a worse fate. Yet, without the Apple trees and the large fireplaces, the plants and forcing of that winter with me

would have been worse than Polmaise failures; for the winter set in by the middle of January, the coals were frozen on the Severn and in the Gloucester Canal for six weeks, and the Forest of Dean, the next source for the supply of coals, was twenty miles off and in deep snow. Were it not, therefore, for the sacrilege on the cider orchard, all would have been lost on my hands.

One large stove-conservatory for fruiting tropical fruits I had to thatch on one side, just as Mr. Fish had to do this winter; but in the following spring I flowered more climbers, which are hard to bloom, than I ever saw done by any one else. *Thunbergia coccinea*, which was frozen to the back wall of a damp greenhouse, lost all the leaves and was in one blaze of bloom for March and April, just like so many Scarlet Runners. That plant I have not seen in bloom from that day to this. *Bignonia Chirere*—then thought to be a stove plant, from having first flowered in a stove at Dropmore the previous year—was part glued to the roof of that great conservatory by the frost, and lost many of its leaves; but in the August and September following it bloomed more freely than any plant of the kind has since done in a greenhouse. *Bignonia venusta*, which is yet said to need bottom heat to bloom it well (a grievous mistake, however), was trained against the uprights of the front sashes, within two inches of the glass right and left of it, had most of its leaves singed on the edges from the top to the bottom of the front glass, a height of fifteen feet, but it flowered more profusely that spring than I ever saw or heard of before or since; and I sent one shoot of it with seventy-four bloom-bunches, with from twenty to fifty flowers in a bunch, to Colonel Drummond, then at Underdown, near Ledbury, and now at the Boyce, near Dymock, who can tell the tale to this day. No wonder, therefore, that I should so appreciate the sound sense and reasoning from this garden of England, as they in Hereford like to call their county; and had it not been for the badness of the last summer, we should see more of the Bougainvilleas in bloom next summer than we ever yet have seen with us, and that owing more to the forced and complete resting by means of the frost of this winter, than by all the summer bottom heat which heated imaginations had ever dreamed of in their philosophy. Indeed, the most astounding unphilosophical page in all our books is that which teaches the use of bottom heat for exciting climbers which are difficult to bloom in our climate, for want of sun in summer, and in the absence of entire rest during the winter. I have done more on the other fact than most men, and my whole experience goes against the doctrine of bottom heat to any exotic climber which is not a free bloomer. What bottom heat has done that way is a very rare exception indeed, and may not do the same again for a thousand years.

D. BEATON.

PRESERVING SOWN-SEEDS FROM BIRDS.

YOUR correspondent, Mr. J. Wighton, at page 227 in your last volume, called the attention of the readers of THE COTTAGE GARDENER to a plan which I have adopted with success for some years past, and never knew it fail either on a large or small scale, and I can vouch for the truth of it when I say that 3d. will go further towards securing the end in view than paying a boy to look out, or netting, or sticks and feathers, or such like plans; and we know how many good practical gardeners cry out with THE COTTAGE GARDENER, "The birds took all my seed, and I could not keep them off."

As we shall have many anxious to commence sowing as early as they can on their sunny borders such things as seeds of Radishes, early Cauliflower, Cabbage, early Turnips, &c., now we have a change in the weather, let me again call their attention to the simple recipe to prevent the attacks of finches and sparrows. First damp, not wet or soak, all the seeds which are likely to be attacked by birds or mice, take some red lead thoroughly dried. Put some in a saucer, plate, or dish with your damp seed; shake it about till every seed is covered; sow, rake in, and no bird or mouse will touch one. I have

tried beds side by side, one with and one without, and the canny birds could tell the difference as was seen when the plants appeared.—Your formerly Pilsby Nursery Correspondent.

THE NEW RÉGIME OF THE ROYAL HORTICULTURAL SOCIETY AS IT AFFECTS FLORISTS.

IF there be one person more than another for whom the true botanical species of the genus *homo* has a contempt, the florist is that person: he is a charlatan, a mere pretender, an intruder in a demesne which is not his, a poacher on preserves from which he has been frequently warned off. There is our dear and well-beloved Tomkins, the most ardent and enthusiastic of botanists, and in whose dreams of the future the occupying of a professorial chair forms a part. Well, he has discovered—yes! discovered in some out-of-the-way-place a plant, "new to science," as the phrase runs—a nasty little weedy thing, without colour, perfume, or anything that any one but a botanist can discover to recommend it. How proud he is! He brings it before learned societies, writes monographs of it for botanical journals, and the *Callopygia hypothetica* of Tomkins is quoted far and wide.

In the zenith of his glory, our little friend Snooks ventures to bring before him a flower redolent of the sweetest perfume, most perfect in shape, and brilliant, or delicate (as the case may be), in its markings. It has cost Snooks much skill, labour, and time to produce it; but the look of contempt with which Tomkins regards it is quite refreshing. "Call that made-up thing a flower! Why, my dear fellow, do you not give up such rubbish, get a collecting-box, study Lindley's botany, and have an herb-arium?" Snooks who is timid and retiring, is very much disconcerted, and begins to think that after all Tomkins is right.

In something of this spirit florists used to be treated by the Royal Horticultural Society. We at a distance, who knew not the wheels within wheels that regulated its movements, could not account for it; but we were told that florists' flowers did not deserve the fuss that was made about them, that the Society aimed at the encouragement of horticulture, and not of such trifles as florists' flowers.

Well, "tempora mutantur," and we can imagine the ghosts of former members of Council gazing with mute astonishment at the programme of the coming Exhibition at Kensington Gore, as reported in the last part of the "Proceedings" of the Society. Nay, it is questionable whether there are not some connected with it, who are still in the flesh, who do not look upon it as a sad decadence and a pandering to a vitiated taste. Florists will hail it with thankfulness, for it indicates a change in the right direction. They know well enough, that, for one person who will stand to admire a group of new or rare plants twenty will stand over a box of Rose blooms, and, therefore, they believe that if the Society is to prosper, the more that it takes them into consideration the more is it likely to be popular. A good deal of this is to be attributed, doubtless, to the change that has come over the spirit of the dream of the Council in general, but, perhaps, more to the fact that they have, to use a modern phrase, in Mr. Eyles "got the right man in the right place." His experience at the Crystal Palace Shows has taught him that we florists in no slight degree add to the beauty, the attractiveness, and, consequently, the financial success of an exhibition; and, hence, a grand Rose Show in July, another of Dahlias and other autumnal flowers (all florists' flowers), and a Chrysanthemum Show in November. The prizes are on a most liberal scale, and the regulations for insuring honesty in showing, and neatness in appearance, are all that could be desired.

Witness, for instance, those with regard to the Exhibition of Roses. The definition of a truss is just that for which I have always contended, and which I hope will be adopted at the next National Rose Show—viz., "That it is to consist of one shoot cut from the wood of the current year's growth; any disbudding from, or addition to, the original truss, will disqualify." Fixing, too, the size of boxes, and even of labels, is a step in the right direction, and proves that the Exhibition Committee knows what it is about; and one cannot but think that liberality and wisdom, such as are manifested in the schedule, will bear most advantageously on the interests both of growers for sale and on amateurs; and when one sees this as supplemented by the Floral Committee, which gives honorary awards to the best new varieties of seedlings, I think the public, if it watch all these things regularly, will be sufficiently protected from being imposed upon.

by any descriptions, however high flown and orientalised they may be.

Now, may I ask, having given one's modicum of praise (and unwilling to forego an Englishman's undoubted privilege of grumbling), why we, the florists, have been treated so badly in the June Exhibition? Is not this the one that Her Most Gracious Majesty is to honour by opening in person? Is not every one striving his utmost to be ready for that day? and why are we, poor Brown, Jones, and Robinson, excluded? We, too, are loyal; we want to shout "ooray;" we want to have a share in spoiling Mr. Nesfield's Box and gravel patterns when the rush is made to see our beloved Queen; we want to hear her say, "How very pretty!" and yet we are in a great measure excluded. Not a word said about Pansies, Tulips, Ranunculuses, or Pinks. Why is this? The day, it is true, may be an awkward one. Tulips may be over, and Pinks and Ranunculuses not in, but this depends more on the season than one can prognosticate.

There were some good stands of Tulips at the last June Show of the Royal Botanic Society. If the season be forward they may be over, but then Pinks and Ranunculuses would be in, and under any circumstances Pansies are sure to be in good condition.

We are glad to see Roses and Pelargoniums taking their place, but we who have only one, two, or three frames would be better pleased were we considered. Nor will it do to say, "Oh! if you bring them their claims will be taken into consideration." We do not want to trust to such a peradventure as that. But let us hope that these regulations are not like the laws of the Medes and Persians, and that there is still time to give us poor fellows a lift. I appeal, on behalf of "self and fellows," to the good sense and wisdom of the Exhibition Committee; I ask them to remember our claims; I challenge Mr. Eyles to say whether he did not find at the Crystal Palace that these flowers had their thousands of admirers, and whether, then, we do not justly deserve a place. Moreover, it would give an opportunity to the "minnows" amongst nurserymen to try their hands. There are leviathans who can send untold treasures of floricultural wealth to a Show; but there are also owners of small plots of ground, employing, perhaps, only one or two hands besides themselves, who can send their box or two of cut blooms. Let them, too, be considered.

In thus saying, I do not speak as an intending exhibitor—I have nothing to show, but I speak for those who may have them. We are all in tolerably good humour with the Society; let these little concessions be made to us, and I venture to say that we shall be as ready as any of those of whom I have written, to welcome its success, and shout "*Io triumphe!*"—D.

BRINGING VINE ROOTS NEARER THE SURFACE.

I HAVE a small vinery, the Grapes in which shrank very much last season, owing, I think, to the excessive wet and so little sunshine. The roots also I think are too deep. If we consider the difference of temperature in which the roots and the branches are growing, their shanking off cannot be so much to wonder at. Fancy the branches in a temperature from 60° to 75°, and even higher in bright sunshine; and at the same time the temperature at the roots could not be much over 40° where they are at the depth of two feet or more. The Vines are the Muscat of Alexandria and Grizzly Frontignan—almost the worst to do well, I think, in such an ungenial summer as the past was.

I intended to lift them as soon as the Grapes were all cut about a month ago; but then the frost set in, which put a stop to my intention, and I doubt whether I shall be able to it this season, as it is now getting late for such an operation. The border is well covered up with long litter to keep out the frost, but still I cannot think of doing it while the weather is severe: so I have thought of trying another experiment. When the weather breaks I think of taking some of the soil off nearly to the roots, and replacing it with some warm manure to encourage the roots up a little. While I am waiting for a change of weather I forward this to you for your advice.—A YOUNG GARDENER.

[We think you are mistaken as to 40° of temperature. In such a case all depends on the mode of raising the roots. We have raised those of late Vines in March and did not miss a crop, though the Vines were weaker the following season. As

soon as the roots had been raised the surface was covered with fifteen inches of warm dung and leaves, and fresh roots were beginning to push before the buds broke. If not experienced at that work, the plan you propose will be far the safest. We should not wonder if you went a foot, or more, down without meeting with a root. We would remove all the soil down to the roots, and even moving a few of these if nearer the surface; then fork over the surface an inch or two with the point of a fork, and add an inch or two of fresh loam and lime rubbish, and add your covering to give a heat at the surface of the ground of from 60° to 65°. If the drainage is right the plan will answer: if no drainage, it will merely palliate the evil.]

HEATING APPARATUS OF THE CONSERVATORY IN THE NEW GARDENS OF THE ROYAL HORTICULTURAL SOCIETY, KENSINGTON GORE.

THE following are the tenders sent in for the above apparatus:—

| | | | |
|--|------|----|----|
| Messrs. John Weeks & Co., horticultural builders, King's Road, Chelsea, S.W. | £ | s. | d. |
| Mr. William Hood, 12, Upper Thames Street, E.C. | 975 | 0 | 0 |
| Messrs. A. Shanks & Son, Den's Iron Works, Arbroath, Scotland | 1216 | 0 | 0 |
| Messrs. J. Taylor & Sons, Warwick Lane, Newgate Street, E.C. | 1250 | 0 | 0 |
| Messrs. Cottam & Co., 2, Winsley Street, Oxford Street, W. | 1300 | 0 | 0 |
| Messrs. Barwell & Co., Eagle Iron Foundry, Northampton | 1307 | 0 | 0 |
| Mr. J. Wontner Smith, 20 and 21, Tenter Street, Finsbury, E.C. | 1321 | 0 | 0 |
| Mr. W. Jeakes, 51, Great Russell Street, Bloomsbury, W.C. | 1350 | 0 | 0 |
| Mr. Alfred May, 259, High Holborn, W.C. | 1357 | 18 | 0 |
| Mr. Henry Ormson, Stanley Bridge, King's Road, Chelsea, S.W. | 1480 | 0 | 0 |
| Mr. Thomas Potter, 44, South Moulton Street, W. | 1490 | 0 | 0 |
| Messrs. John Taylor & Sons, Harrow Road, W. | 1497 | 14 | 6 |
| Mr. T. H. P. Dennis, Chelmsford | 1551 | 14 | 2 |
| (N.B.—This estimate includes in slump gratings, which are not in the other tenders.) | 1745 | 0 | 0 |

Mr. Frederick Bacon, 16, Ebury Street, Pimlico, S.W. 1839 17 0

The following gentlemen also sent in tenders, but imperfect:—

Mr. A. M. Perkins, 6, Francis Street, Regent Square, W.C.
Mr. John Micklejohn, Westfield Iron Works, Dalkeith.
Messrs. Feltham & Truss, 53, Gracechurch Street, E.C.

NEW AND RARE PLANTS.

MUSA ENSETE (*Ensete* or *Bruce's Banana*).

Nat. Ord., Musaceæ. *Linn.*, Polygamia Monœcia. Native of Abyssinia. The centre of the stem whilst young is soft and juicy, and eaten with milk and butter is excellent. The fruit is not edible.—(*Botanical Mag.*, t.t. 5223—5224.)

PUYA WARCZEWICZII (*Warczewicz's Puya*).

Nat. Ord., Bromeliaceæ. *Linn.*, Hexandria Monogynia. One of the handsomest of the Natural Order. Flowers yellowish-white: bracts purplish-crimson. Believed to be a native of Guatemala. Stove plant flowering in August.—(*Ibid.*, t. 5225.)

TABERNÆMONTANA GRANDIFLORA (*Large-flowered Tabernæmontana*).

Nat. Ord., Apocynææ. *Linn.*, Pentandria Monogynia. Native of Guinea and Venezuela. Stove shrub. Flowers yellow, produced in September.—(*Ibid.*, t. 5226.)

COSMOS DIVERSIFOLIUS var. ATRO-SANGUINEUS (*Dark-blood-coloured, various-leaved Cosmos*).

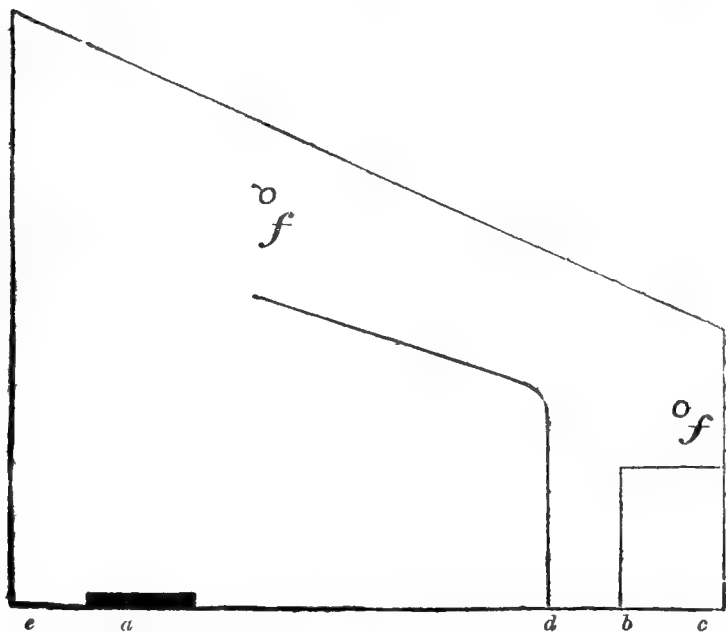
Nat. Ord., Compositæ: Senecionideæ. *Linn.*, Syngenesia frustranea. Native of Mexico. Flowers deep purple crimson. "The plant is best preserved in a greenhouse during the winter, and turned into the open border during the summer.—(*Ibid.*, t. 5227.)

GRAFTING THE CARNATION.—Fine double varieties of the Carnation are easily propagated by cleft or side-grafting on common or single stocks; they can also be grafted on the *Saponaria officinalis*—the "Bouncing Betsy" of American door-yards—by taking pieces of the root about one inch long, and from one-third to one-half an inch in diameter, preserving as many of the fibres as possible. Then take a branch or shoot of the Carnation about six or eight inches long, and graft it by side-grafting on the side of the piece of root at the upper end. The best time for doing this is about the middle of May. Plant them close together, and cover with a bell-glass. No bottom heat is required.—(*Guide du Jardinier Fleurist.*)

GROWING PEACHES AND GRAPES IN THE SAME HOUSE.

I OFTEN see the question asked in your columns—Can I grow Peaches and Grapes together, and how am I to manage it? As the subject is deserving of attention, I forward you a sectional view of what I consider our most productive house. It is an old-fashioned lean-to, 30 feet long and 13 feet wide, height at back 12 feet, ditto front 5 feet, and it is heated by a flue running round the house, the return flue being built in the back wall. The front wall is on arches, which allow the roots of either Peaches or Vines to ramble at will.

Fig. 1.



- a Principal path through the house.
- b Front path parallel with a.
- c Front flue.
- d Wire trellis, with one Elruge and one Pitmaston Nectarine.
- e Back wall and wire trellis, with one Royal George, one Noblesse Peach, and one Elruge Nectarine.
- f Black Hamburg Vine suspended from rafters.

The Vine is planted in an outside front border, and in shape resembles fig. 2. It is furnished with spurs its whole length,

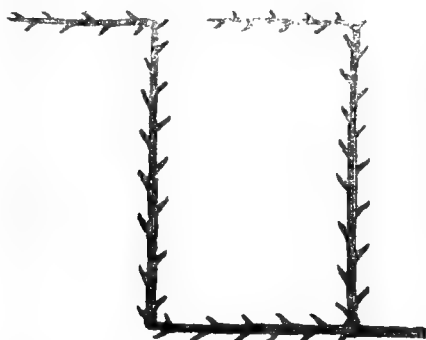


Fig. 2.

and has not failed to produce from eighty to ninety bunches of good Grapes every season since I undertook its management nine years ago.

The house, also, produces fine Peaches and Nectarines. The front and ends of the flue are covered with a stage, and is useful for storing Strawberries in pots during winter; and this being what we call our second Peach-house, we get a crop of

Strawberries in it a month or six weeks before the out-door crops are ready.

After Strawberries, Capsicums in pots take their place, as we can do but little with them in the open air in this cold district.

The bed under the front row of Nectarines I find is a capital place for Dwarf Kidney Beans in pots. On this bed last year I had several Red Currant trees potted in No. 3-sized pots the previous autumn for the purpose. They were only three-year-old trees, and I trained the young shoots down balloon-fashion. They not only looked pretty, but they each produced enough fruit for two good-sized tarts, and were six weeks earlier than those in the open garden.—JOHN STEVENS, *Gardener, Malvern Hall, Solihull.*

DUMOND'S INSECT POWDER—TEMPERATURE OF WALTONIAN CASE.

THE writer having a very large sort of Waltonian Case warmed by hot water put in to the false floor, begs to be told the heat she should aim at, and the sort of plants considered suitable for it.

May she mention the wonderful effect of Dumond's insect powder in destroying, for the last ten months, every vestige of green fly that has appeared on her plants? Carnations especially, and Roses, having been in a frightful state before she used it. One dusting has been invariably sufficient for even the worst cases; and perhaps to amateurs like herself so easy a remedy may be valuable, which leads her so far to trespass on the time of the Editors. What becomes of the bodies of the slain she cannot imagine; for on seeing the plants a day or two after not a trace of them is visible. The plants are perfectly uninjured, there is no disagreeable smell, and one of the little sixpenny puff-balls has lasted the whole time. It is capital, too, for birds if they have any insects about their feathers; a pair bought in a bad way were soon all right.—A LADY.

[More account of the powder and the number of plants a certain quantity was applied to would be interesting. Even a small box of snuff would go a certain way. The bodies of such insects, if not eaten, soon shrivel up.

The Waltonian Cases are seldom used for growing plants, though they would answer well for small Ferns, Mosses, and the smaller of pretty-leaved plants. Mr. Beaton chiefly recommended them for propagating; and for such a purpose from 60° to 70° bottom heat, and 60° top heat, would do for most things. If you give us a detail of what you wish, we would readily advise you, and also as to room plants. As respects the latter, have you read "Window Gardening?" as that gives a great amount of information on the subject.]

HOYA IMPERIALIS SHEDDING ITS BUDS.

I HAVE a Hoya imperialis in a pot about eight inches in diameter, apparently a strong healthy plant. It covers a pillar-shaped trellis four feet high, and is kept in a stove-house with a night temperature at this season seldom below 55°, and day between 60° and 70°; in summer and with sun, of course, rising higher. For more than a year past it has shown an abundant tendency to flower. The buds on the blooming-stalks become about the size of a pin's head, when they are thrown off: frequently reproduced to be thrown off again and again.—M. S.

[We can think of nothing except keeping the plant as dry as to be safe all through the winter, and thus depriving the plant of a portion of its extra vigour. At no time do these plants need much water at the roots if in an atmosphere at all moist. We believe great vigour of growth is the cause; but, no doubt, you are as well aware of that as we can be.]

FORCING.

(Continued from page 224.)

MOVEABLE BOILERS.

IN these 'days of moveable houses a boiler that needs no setting will be an advantage. We have seen several small boilers made with copper in the conical or cylinder shape answer well for this purpose. To look at them you would see little to distinguish them from the iron stoves you can get at an ironmonger's, only there is a two-inch space, or half of that, for water all round the central fire-tube. They are chiefly useful for middle-sized houses. They should have feet to stand on. Of course, unless they are placed inside of a house, much heat is lost from the outside being exposed. I have seen one placed outside of the house, and a cover placed over it of wood or asphalt, with the exception of a piece of sheet-iron on the side where the iron smoke-funnel comes from the stove-boiler; the wood being painted white inside and placed eighteen inches from the stove, a door opening to enable the processes of cleaning and firing to be properly attended to. Where economy and moveability, however, are to be combined, such a boiler should be placed inside the moveable house. Those who like elegance may buy a Riddell's stove, but supplied with a flue or smoke-pipe. Where economy is an object, have an iron stove, like any of those we have figured and described; and, instead of the usual top, have a vessel made to fit it that will hold five or six inches deep of water. If deeper it will be all the better. Such a vessel will heat a little tank nicely, and a good number of feet of piping. With but little expense, but with a little care, dry or moist heat may thus be obtained from such stoves, or stove-boilers, at once.

In the case of boilers pretty much on a level with the pipes to

be heated, the flow-pipe should be as near the top as will secure that pipe being kept full, and the return-pipe should enter near the bottom. These matters secured, the flow and return pipes in the house may be one above another, or both on the same level or nearly so. We think in the latter case the return-pipe gives off more heat. When the boiler is close and sunk beneath the level of the heating-pipes some feet, the boiler will always be sure to be full of water so long as there is water in the pipes. If there is an open cistern at the highest part of the pipes, fresh water may be given there. Some prefer a cistern on purpose near the boiler placed higher than any of the pipes, and a pipe going directly from it to the bottom of the boiler. In this latter case an open air-pipe, such as is used for gas-burners, should be inserted in the highest point of the pipe to prevent air accumulating there; and in very small places such air-pipe should go outside the house, as an extra strong fire may cause the water to be thrown out in boiling hot jets. Under similar circumstances, also, a very small cistern connected with the flow-pipe may easily be made to run over, when the attendant thinks of nothing but keeping a strong fire burning. When heat is once raised, a small smothered fire will keep it up.

EXPANSION OF WATER.

The cause of this is the expansion of water by heat. I cannot just now lay my hands on some memoranda as to the determinate expansion of water as it gets near the boiling-point. One singular fact about water ought to render the gardener very careful of a double expansion, as it may be called—expansion by cold and expansion by heat. By the first, hot-water pipes in houses not worked in winter are often injured by frost, and in such cases the pipes should be left empty. Water has its greatest specific gravity or density at 42° Fahr. Whether it rise or fall below that in temperature it expands, becomes lighter and wants more room, and hence it is that ice keeps at the surface. The bulk is not increased in a regular manner, according to the degrees of the thermometer; but whatever number of degrees it falls or rises from 42° the increase in bulk will be the same. Thus the bulk at 37° will be 1000.55, and at 36° 1000.56; but at 32° it will be 1000.66, at 31° 1000.70, and at 30° 1000.74. Thus, also, on the principle referred to, the specific gravity of water at 30° will be the same as if it were at 54°; and water at 10° will be expanded as much as if it were at 74°. As we raise the temperature we increase the expansion or lightness, but not in arithmetical progression; for whilst at 74° each addition of a degree would give about .00014 of an increase, at 102° it would give .00025 for each degree; and at 182° it would, for every degree in addition, expand .00036, according to Mr. Tredgold.

EXPANSION OF PIPES.

The above matters should be kept in mind in winter, as, if the pipes are of metal, they will contract in frost, whilst the water in them expands. All pipes will expand by heat, but all metals will expand more than earthenware. Metal pipes containing water about 200°—and it should seldom be hotter—will expand about one inch in 100 feet. It is better, therefore, to have them slung loose than to have them firmly bedded or close fixed.

MAKING JOINTS.

On the above account when made of easily expanded materials, and crammed too tight and full, openings either will be made or the joint will fly. All joints that come in contact with the fire are best done with iron filings. For flange joints fixed to the boiler there, vulcanised Indian-rubber tightly screwed up will do; but though it may be prejudice, I prefer for such places flange or socket joints, iron filings, cement composed of one part sal ammoniac finely powdered, added to about ninety parts of finely powdered iron filings. A small portion of this is put into an iron vessel, and enough water given to make a thick mixture as wanted, as it will soon get too hard for use. A band of tow or rope yarn is incorporated with it, and then by means of a thin chisel or spatula, is driven home to form the bottom of the joint. Continue the process until the joint is firmly and securely filled. The mixture takes such hold of the iron, that taking it out of the joint afterwards is next to an impossibility. Some artificers use a little sulphur in addition, but I cannot say it is any advantage. The joinings of Southwark bridge were thus formed:—one ounce of flowers of sulphur, two ounces of sal ammoniac, and sixteen ounces of iron filings pounded fine and dry in a mortar. When wanted, take one-part of this mixture, and add twenty-parts more of clean iron filings, and use water

to bring to suitable consistence as above. For all other joints not in contact with the fire, I would just as soon have the joints of pasteboard, tow, or rope yarn, saturated with red lead, driven firmly home. These can easily be taken to pieces by applying burning charcoal below the joints to soften them. In cases of great pressure the iron-filings joint would be best. When pipes of sheet-iron, galvanised iron, copper, &c., are made to fit each other by flanges, then pasteboard, and a mixture of red and white lead on each side, make capital joints when screwed together. In small houses when such thin pipes are used for water, and are merely made to fit into each other at the ends without any sockets, a mixture of red and white lead, made a little thin with a little boiled linseed oil, put on both sides of a piece of flannel, or cotton, will make a good joint, or soldering may be had recourse to—in fact, lead joints do very well if a short distance from the fire. Earthenware pipes with sockets may be first done with a bottom layer of tow and red lead, and the rest of the joint be made with cement.

MATERIALS FOR PIPING.

All things considered, there is nothing better on the whole than cast-iron pipes. Some other metals, as copper, may be better conductors and radiators of heat; but iron is very fair as respects these properties, and has the advantage of cheapness and strength. All earthenware in proportion to its porosity is deficient in conducting and radiating power. Heat when once communicated, however, must be given off until an equality is reached between the heated body and surrounding objects. Bad radiators are, therefore, longer in giving out heat; but, just on that account, they give it out much longer before they are cooled. The same thing may be said of thin copper and ordinary-sized cast-metal pipes. The latter will keep hot longest, and radiate heat freely too.

We naturally like to see the effects quickly of the fire we light below the boiler; and, therefore, the colour of the piping is important. A light-coloured pipe may be quite as hot as a dark one, but the heat will not be thrown off in anything like the same proportion as to celerity. The brighter and whiter the colour, the slower the radiating power. The nearer the pipes are to black, the quicker will they part with their heat. Black is not only the best radiator, but the best absorber of heat. A simple example will make this clear. In many parts of the north, "black jacks," or vessels of dark earthenware, are preferred by the labourers' wives for teapots. In London, mechanics wives like to show off their bright Britannia-metal teapots. The properties of the two vessels as respects absorbing, conducting, and radiating heat, are very different, and yet good tea is made in both by altering the management. The country lady heats her pot with boiling-water rinsing or other means, puts in the tea and covers with a sufficiency of water to draw out its virtues, and then places her pot close to the fire. The heat that thus would be thrown off from one side of the teapot is more than counteracted by the heat absorbed from the side next the fire, and thus the fluid within is kept to within a few degrees—say 10° or 15° of boiling water. The brisk mechanic's wife brings her elegant tea-caddy, puts in her tea, and pours the boiling water on it at the table before everybody, and allows her pot to stand *there*. The bright polished surface keeps the heat in, and thus draws the virtue out of the tea. Even if she placed the pot near the fire, which she will not do because it might tarnish the brightness, she would not gain a vast advantage, because the bright surface would *reflect* the heat considerably instead of absorbing it. If the village dame went through this mode of making tea with her black teapot, and set it at once on the table, her tea would be sorry stuff, because the water inside would cool too quickly. The matter may easily be tried by two such pots, and marking how much sooner the boiling water cools in the one than the other. Two metal teapots may serve for the same experiment, the one bright scoured, and the other painted black. Hence, as we wish to get heat quickly and regularly from our pipes, a black or dark colour is the best—such as is formed by oil and lamp black.

DIRECTION OF PIPES.

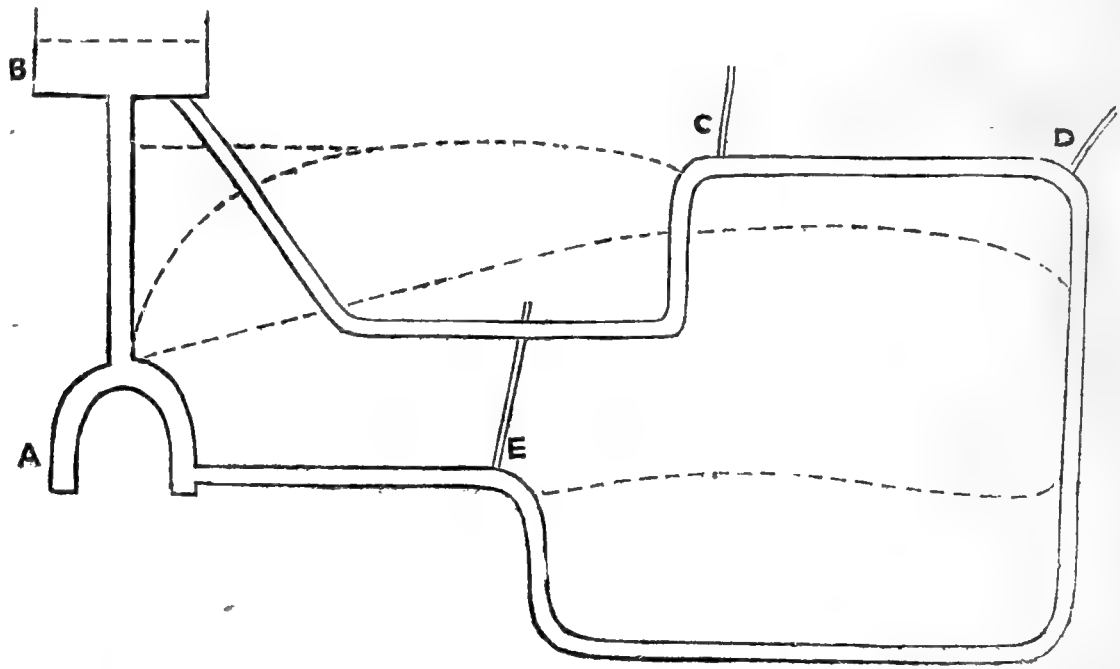
From an open boiler, they should be on a level with it; from a close boiler, they may go to any reasonable height. For instance: From a boiler in the cellar a flow and return pipe may go to the garrets in a mansion, and may be filled there from an open cistern. From that flow and return branches may go to every room in the house. From such a close boiler, and at

any reasonable distance from it, a pipe may rise to any height and dip again, provided there is an air-pipe at the highest point; but the rise and dip should not under such circumstances be repeated. It is sometimes desirable, as in passing some doorway, to lower the pipes even below the boiler; but when this is the case, the pipes must first rise rather more above than it is desirable to sink them below that level, and it should not be repeated—in fact, it is best to avoid ever having a pipe lower than the boiler. I have met somewhere an example like *fig. 23*. A, The boiler; B, an open cistern; C, D, points where air-pipes should be fixed, and we would even wish one to be at E. But for some great necessity the dotted lines will show a far more satisfactory mode of heating, the lines dotted showing various points where the pipes might be placed.

there would require to be five holes in each cistern instead of three; or, better still, have additional T-pieces for the flow and return pipes, and give each pit its cistern for itself. By this cistern mode, from the pressure given, the heated water will circulate freely on any level, provided it be above the boiler. Even then, when many holes for pipes are in a cistern, some will take more than their share at times; but, when once known, that is easily guarded against, by regulating the opening by the plug. I like oak or deal plugs for this purpose as well as any.

Some friends may say, Why have these cisterns at all, when by means of a main flow and return carried across the ends of these pits, we could, by means of a valve, turn-on top or bottom heat at will? We have no objection whatever, only many of these valves must be so far under the ground level, and bad to

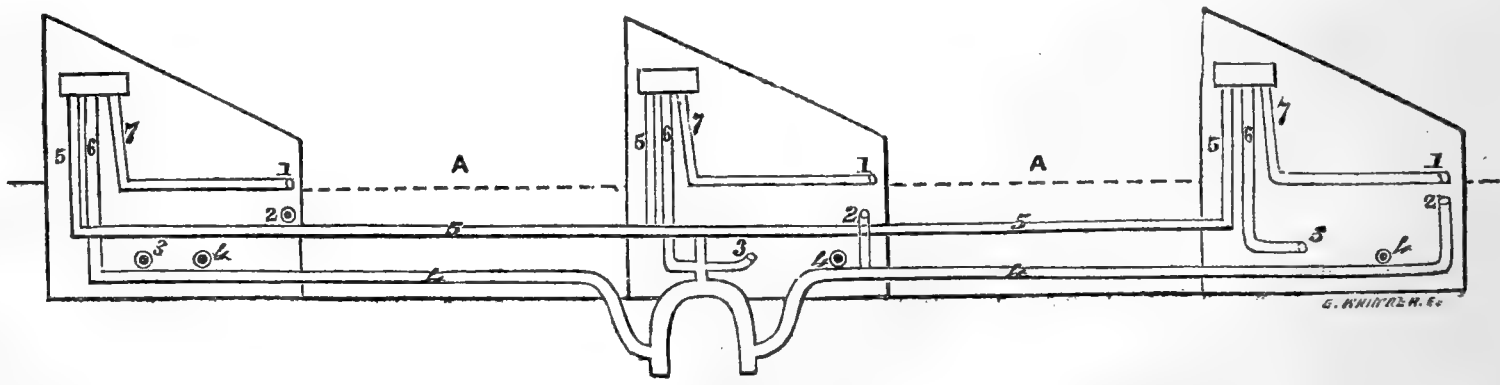
Fig. 23.



The great advantage of hot water is the ease with which a number of houses may be heated from one boiler. *Fig. 24*, shows the sections of three ranges of pits—say each 50 feet long, so supplied with top and bottom heat, each with an open cistern raised to regulate that top or bottom heat at will. The dotted line A, is the ground level. The flow-pipe 5 communicates directly with each cistern. There are two more holes besides containing the mouth of pipes, to be open, shut, or regulated at pleasure, by plugs. 6 is the flow-pipe for bottom heat, joining pipe 3, which goes along to the farther end, rising two or three inches, having an air-pipe there, and returning in pipe 4, which is joined to the main return 4. 7 is the flow-pipe for top heat at front 1, which also going to the further end, and being supplied with an air-pipe there, comes back as 2, which is again joined to the main-return 4.

get at when out of repair. With the open-cistern mode it is hardly possible for anything to go wrong. Mr. Weeks heats his huge parallelogram of houses in the mode you propose. A flow and return pipe goes through the houses on a low level, below the pathway as far as I recollect, and by merely having connecting-pipes with these fitted with valves, he can give what heat he likes to a house, and top and bottom heat at will, and may arrange his pipes any way he likes, provided there is an air-pipe at the highest point, and none are below the main flow and return. Our friend, Mr. Fraser, at Luton Hoo, has lately had a large range of houses heated by one boiler, the main flow and return pipes going under the back pathway, which is covered with stout slate. With these mains, the pipes at ends and fronts of the different houses are connected by a pipe with a valve in it, so that any house in the range may be heated at will

Fig. 24.



By such a plan there is some extra piping wanted to go to and return from the cistern; but the plugs are all under control, and as simple plugs will do as well as the finest brass valves, the expense of the latter is avoided. It will easily be seen that by continuing the flow and return, five pits may be heated instead of three, if the boiler is powerful enough; or, supposing that these three pits ran eastward, other three might run westward with a pathway between them, only

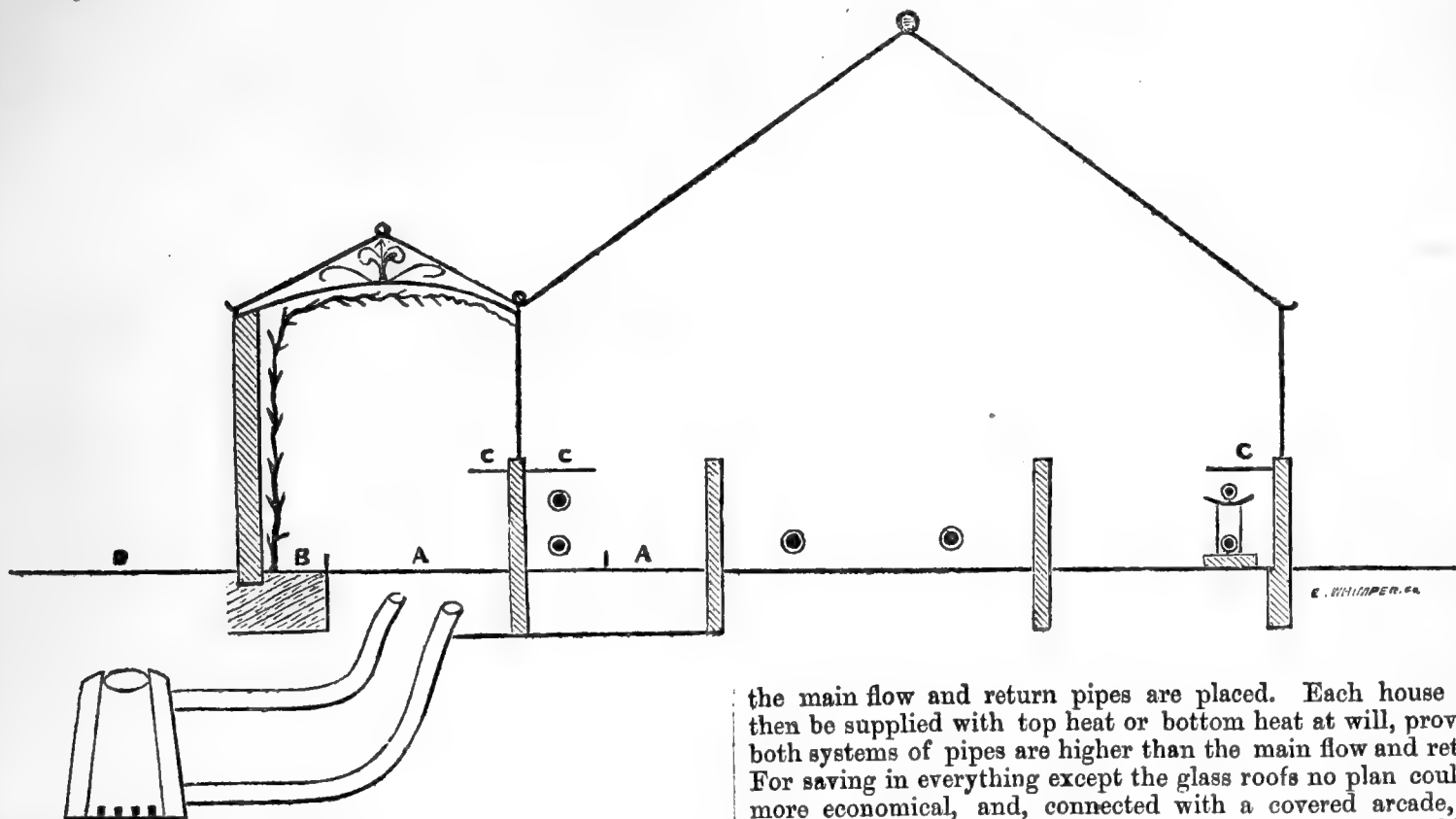
and to the temperature desired. The range previously, I think, had three or four boilers. The change was made by Mr. Ormson, and Mr. Fraser speaks highly of the saving in labour and fuel.

A very beautiful range of span-roofed houses standing north and south might be so heated; the houses separated from each other for 20 feet or so, and all connected with a glass-covered verandah on the north side, with the main flow and return pipes under

the pathway, from which a connection would be formed to each separate house—one house being heated to suit Peaches, another Vines, another Pines, or other tropical plants. *Fig. 25* will give an idea of such a plan. A, the pathway; B, border for wall plants in verandah; C, shelves; D, ground level. The mains underneath the pathway are connected with the heating-pipes in each house at any level most desirable,

the back. By this means, the outside walls being secured, one wall serves two houses, and one spouting each instead of two. Mr. Ferguson, of Stowe, has designed houses for the million on this plan: I am not sure whether they are yet published. *Fig. 26*, however, will give an idea of our meaning—say the houses are 12 feet to the ridge and 20 feet wide, and all connected at the back with a glass-roofed verandah, beneath the floor of which

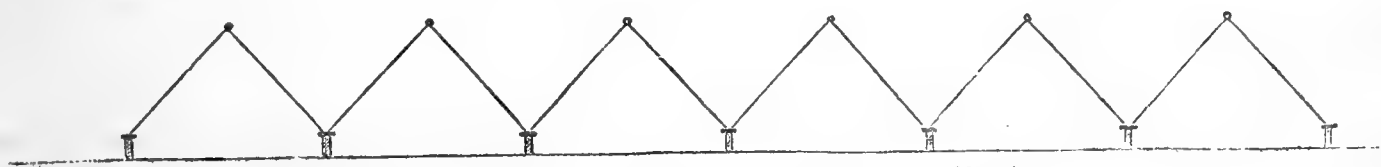
Fig. 25.



A cheaper and also an elegant mode for such a range of span-roofed houses would be to join such houses together, as was mentioned in *THE COTTAGE GARDENER* as done by Mr. Lane, and then be connected together by an arcade or verandah at

the main flow and return pipes are placed. Each house may then be supplied with top heat or bottom heat at will, provided both systems of pipes are higher than the main flow and return. For saving in everything except the glass roofs no plan could be more economical, and, connected with a covered arcade, few plans could be more pleasing. The only place in which I have seen span-houses thus connected together at back was at Lord Panmure's, near Carnoustie, as designed and executed by Mr. Charles McIntosh, a notice of which appeared in a previous volume of *THE COTTAGE GARDENER*.

Fig. 26.



South end of span-roofed houses—not showing mode of heating.

(To be continued.)

R. FISH.

HOUSE FOR WINTERING GERANIUMS, &c.

WOULD a small greenhouse, 8 feet by 5 feet 6 inches, north aspect, back and one end walls of houses, no sun summer or winter, but plenty of light, do for keeping Geraniums, Verbenas, Fuchsias, &c., through the winter without heat? and if so, are there any plants that would blossom in summer without sun or artificial heat? Secondly, If I must have heat what would be the most economical method? and are there any plants to bloom in it in summer without sun but with heat, as I should like to see the house a little lively when my bedding plants are out, as it is in sight of my living-room? The only time I have to attend to it is after six in the evening, and my means are very limited. I shall be my own mason, carpenter, glazier, and painter through necessity. I was always fond of flowers; but my pleasure in my bit of town garden has been doubled, and my slight knowledge increased, by the perusal of some eighteen or nineteen Numbers of *THE COTTAGE GARDENER* I had lent me—a book I would take in if I could afford it. I see in some of the Numbers complaints of the gas smutting the boilers. This is easily obviated by having a cylinder of any thin metal, the diameter about 1½ inch or 2 inches larger than the ring of jets or burner, and about 6 or 7 inches long; a piece of fine fly-wire (gauze is too fine), placed over the top end, and the gas turned on under and lit on

the top of the wire, will produce double the heat from the same quantity of gas, and no smut at all or soil of any kind. The cylinder is put on just in the same way as a globe over the common burners,

I have a beautiful lot of Tom Thumbs, potted in September, doing well until the last fortnight, since when I have lost three dozen cuttings and four large old plants. The stems are seized with what I should call the black rot, which quickly goes down to the root. I have cut off two more of the large plants as soon as I saw it, which appears to have stopped it.—W. MUNRO.

[We hardly understand your circumstances. Writing so far on in January, we should think that the question was hardly necessary if you could keep Geraniums, &c., in such a house all winter. The frost must have been very mild if you kept such things alive without any heat. If your large Geraniums were kept there we should think that frost had something to do with their loss. In such a house in summer you could keep such plants in bloom for a long time without any heat except what the season gave, but you could not grow them well there—they would be apt to become lanky. You do not say that you have any other place for growing. The simplest mode of heating would be by the gas system you mention under a small boiler; or,

merely for greenhouse plants in winter, a small iron stove with a smoke-pipe through the roof, and with a flat head, so that you could set a vessel of water on the top of the stove. To grow stove plants in winter, a similar stove, made with a top containing four or five inches deep of water, and two small galvanised iron pipes three inches in diameter communicating with the top as a boiler, would be the most economical mode. See papers on "Forcing." We should only deceive you, however, if we were to attempt to give you a list of *flowering* stove plants that would do well without sun, especially when flowering and ripening their wood; but if you gave the necessary heat, fine-foliaged plants, like the *Dracænas*, *Cissus discolor*, and the fine-foliaged *Begonias* and *Ferns*, would answer extremely well, and look beautiful from the sitting-room. Much might be done in the same way with greenhouse *Ferns* and hardier variegated plants, merely with a temperature in winter of from 40° to 45°. To grow the other things mentioned above the temperature in winter should rarely be below 55°, and would be better at 60°. See "Doings of the Week" as to frosted or decaying *Geraniums*.]

HOT-WATER PIPING REQUIRED.

How many feet of four-inch piping will it take to heat a span-roofed greenhouse, length 25 feet, 15 wide, and 11 feet 6 inches high? I say not less than 180 feet.—A. P.

[Quite right—from 160 to 200 feet. It is better to have a little more than is absolutely needed.]

THE SCIENCE OF GARDENING.

(Continued from page 227.)

WE shall confine our special remarks upon the diseases of plants to one class, for it is the only one towards which scientific investigation has been directed.

CANKER AND ULCER.—Whatever may be the disease under which a plant is suffering, it is too usual for the cultivator to confine his attention to the part immediately affected. It is looked upon as a strictly local derangement, and the remedies are as erroneously topical. To consider that because a bud, a branch, or a root is diseased, that the cause of the disorder is to be sought for there, is as sensible as to suppose that every local pain endured by the human frame arises from a disorganisation of that part. On the contrary, we know that the diseases of animals arise almost universally from the stomach; and, as Addison remarked, "that physis is generally the substitute for temperance or exercise." The functions of the stomach, by whatever cause deranged, render digestion imperfect and the secretions defective; the bile is superabundant or deficient in quantity, and headache is the result; the liver is diseased, and it causes a pain the most acute between the shoulders; the blood is ill elaborated, and eruptions are thrown out on the surface of the body.

With plants it is the same. It may be laid down as an axiom without exception, that all vegetable diseases, unpreceded by external injury, arise from the unhealthy state of the sap—a state brought about conjointly or separately by the deficient, excessive, or improper food imbibed, and the deranged digestive power of the leaves and other organs. That this is so will not appear strange when we reflect that from the sap all parts of the plant are formed, and are continually increased in number and size. The solid substance of the wood, and the temporary tender blossoms, are alike extracted from that circulating fluid. If the constituents for these are wanting, or if improper components are introduced, disease is the necessary consequence. Disease, which in youth and manhood usually arises from intemperance and over-excitement, visits old age as a consequence of its decayed vital powers; and, "if the silver cord has not been loosed," or "the golden bowl broken" by the short-sighted indulgence of early years, man gradually declines into the grave, as the vital organs cease to perform their offices, because the limit of existence natural to his species has been attained.

Some diseases peculiar to old age are prematurely induced in the usually vigorous period of life by indulgences individual or hereditary. Ossification of the vascular system is an example. In the vegetable part of the creation the *canker* or *ulcer*, to which our *Apple*, *Pear*, *Elm*, and other trees are subject, is

a somewhat parallel instance. This disease is accompanied by different symptoms, according to the species of the tree which it infects. In some of those whose true sap contains a considerable quantity of free acid, as in the genus *Pyrus*, it is rarely accompanied by any discharge. To this dry form of the disease it would be well to confine the term *canker*, and to give it the scientific name of *Gangræna sicca*. In other trees, whose sap is characterised by abounding in astringent or mucilaginous constituents, it is usually attended by a sanious discharge. In such instances, it might strictly be designated *ulcer*, or *Gangræna saniosa*. This disease has a considerable resemblance to the tendency to ossification which appears in most aged animals, arising from their marked appetency to secrete the calcareous saline compounds that chiefly constitute their skeletons. The consequence is an enlargement of the joints, and ossification of the circulatory vessels and other parts—phenomena very analogous to those attending the cankering of trees. As in animals, this tendency is general throughout their system; but, as is observed by Mr. Knight, "like the mortification in the limbs of elderly people," it may be determined as to its point of attack, by the irritability of that part of the system.

This disease commences with an enlargement of the vessels of the bark of a branch, or of the stem. This swelling invariably attends the disease when it attacks the *Apple* tree. In the *Pear* the enlargement is less, yet is always present. In the *Elm* and the *Oak* sometimes no swelling occurs; and in the *Peach* we do not recollect to have seen any. We have never observed the disease in the *Cherry* tree, nor in any of the *Pine* tribe. The swelling is soon communicated to the wood, which, if laid open to view on its first appearance, by the removal of the bark, exhibits no marks of disease beyond the mere unnatural enlargement. In the course of a few years, less in number in proportion to the advanced age of the tree, and the unfavourable circumstances under which it is vegetating, the swelling is greatly increased in size, and the alburnum has become extensively dead; the superincumbent bark cracks, rises in discoloured scales, and decays even more rapidly than the wood beneath. If the caries is upon a moderately-sized branch, the decay soon completely encircles it, extending through the whole alburnum and bark. The circulation of the sap being thus entirely prevented, all the parts above the disease necessarily perish.

In the *Apple* and the *Pear* the disease is accompanied by scarcely any discharge; but in the *Elm* this is very abundant. The only chemists who have examined these morbid products are Sir H. Davy and Vauquelin; the former's observations being confined to the fact, that he often found carbonate of lime on the edges of the canker in *Apple* trees.*

Vauquelin has examined the sanies discharged from the canker of an *Elm* with much more precision. He found this liquor nearly as transparent as water, sometimes slightly coloured, at other times a blackish brown, but always tasting acrid and saline. From this liquor a soft matter, insoluble in water, is deposited upon the sides of the ulcer. The bark over which the transparent sanies flows attains the appearance of chalk, becoming white, friable, crystalline, alkaline, and effervescent with acids. A magnifier exhibits the crystals in the forms of rhomboids and four-sided prisms. When the liquid is dark-coloured, the bark appears blackish and seems as if coated with varnish. It sometimes is discharged in such quantities as to hang from the bark like stalactites. The matter of which these are composed is alkaline, soluble in water, and with acids effervesces. The analysis of this dark slimy matter shows it to be compounded of carbonate of potass and ulmin—a product peculiar to the *Elm*. The white matter deposited round the canker was composed of—

| | |
|-----------------------|-------|
| Vegetable matter | 60.5 |
| Carbonate of potass | 34.2 |
| Carbonate of lime | 5.0 |
| Carbonate of magnesia | 0.3 |
| | 100.0 |

Vauquelin calculated, from the quantity of this white matter that was found about the canker of an *Elm*, that 500 lb. weight of its wood must have been destroyed.† There is no doubt that such a discharge is deeply injurious to the tree, but the above learned chemist appears to have largely erred; for he calculated from a knowledge of the amount of the saline con-

* Elements of Agric. Chemistry, 2nd. ed., p. 246.
† Annales de Chimie, xxi. 30.

stituents in the healthy sap, whereas in its diseased state these are much and unnaturally increased. We once were of opinion, that this disease does not arise from a general diseased state of the tree, but that it is brought on by some bruise or injury, exasperated by an unhealthy sap consequent to an unfavourable soil, situation, and culture; but more extensive and more accurate examinations convince us that the disease is in the tree's system; that its juices are vitiated; and that disease will continue to break out independent of any external injury, so long as these juices continue peccant and unaltered.

The disease is not strictly confined to any particular period of the tree's age. We have repeatedly noticed it in some of our lately introduced varieties that have not been grafted more than five or six years. Although young trees are liable to this disease, yet their old age is the period of existence most obnoxious to its attacks. It must be remembered, that that is not consequently a young tree which is lately grafted. If the tree from which the scion was taken be an old variety, it is only the multiplication of an aged individual. The scion may for a few years exhibit signs of increased vigour, owing to the extra stimulus of the more abundant quantity of healthy sap supplied by the stock; but the vessels of the scion will, after the lapse of that period, gradually become as decrepid as the parent tree. The unanimous experience of naturalists agrees in testifying that every organised creature has its limit of existence. In plants it varies from the scanty period of a few months to the long expanse of as many centuries; but of all, the days are numbered; and although the gardener's, like the physician's skill, may retard the onward pace of death, he will not be permanently delayed. In the last periods of life, plants show every symptom that accompanies organisation in old age,—not only a cessation of growth, but a decay of former development, a languid circulation, and diseased organs.—J.

(To be continued.)

VARIETIES.

CHAPPED HANDS.—At this season of the year chapped hands are a frequent source of annoyance. We know that the following mixture, which may be called "camphor cream," is most efficacious in healing and preventing chapped hands, or lips. Take $\frac{3}{4}$ oz. of white wax, $\frac{1}{4}$ oz. of spermaceti, $\frac{1}{4}$ oz. of camphor, and 2 ozs. of almond oil. Put these into a small jar or jam-pot, and place it by the fire until the ingredients are perfectly melted. When used, it is rubbed into the hands, or wherever the skin is tender, on going to bed, after a previous washing, and thoroughly drying.

THE POTATO IN AUSTRALIA.—It is said that one of the results of Mr. Stuart's exploration in Australia is the discovery of the Potato as an indigenous plant, cultivated by the natives. They eat only the apple, and appear to be unacquainted with the properties of the bulb. Mr. Stuart is said to describe the natives in the district he has visited as strong, courageous, and physically superior to any he had previously seen in Australia.

DOUBLE CONVULVULUS.—It has been said that *Calystegia pubescens* is the only double variety of convolvulaceous plant known. This is a mistake. Messrs. Loddiges, of Hackney, near London, once had in their collection a double variety of *Ipomœa panduratus*, and the same variety still exists in some American collections.—(*American Gardener's Monthly*.)

THE JAPAN BURDOCK is the name of a new vegetable introduced from Japan by M. Siebold. Its roots resemble in taste the Artichoke, and attain a weight of a quarter of a pound.—(*L'Hort. Practicien*.)

TRADE CATALOGUES RECEIVED.

E. G. Henderson & Son's Seed List, Wellington Road, St. John's Wood, N.W., 1861.—This is an 8vo. pamphlet of 84 pages, containing a great deal of information on Flower Seeds, and illustrated with several woodcuts. It announces a great many new things of interest.

Charles Turner's Catalogue of Seeds for the Kitchen Garden, the Flower Garden, and the Farm, Royal Nurseries, Slough, 1861, contains a large assortment for all these kinds of culture; but is more especially rich in Kitchen Garden Seeds, among which we observe some very fine things, particularly the new Peas of Dr. Maclean. There is also a frontispiece representing the pod of *Dolichos sinensis* 3 feet in length.

Stuart & Mein's General Catalogue of Garden, Agricultural, and Flower Seeds, Implements, &c., Kelso, 1861, is of the usual description, with descriptive notes appended to some of the leading things.

Catalogue of Stove, Greenhouse, Hardy Exotic, and British Ferns, &c., by A. Stansfield & Sons, Todmorden.—This is a capital catalogue and contains 713 species and varieties. It bears evidence of careful preparation, but there are a few errors in orthography—as *Dicksonia axillare*, for *axillaris*; *Davallia canariense*, for *D. canariensis*; and *Lastræa canariense*, for *L. canariensis*.

Catalogue of Nursery Stock sold by Hogg & Wood, Coldstream and Dunse, N.B., is well selected, carefully prepared, and neatly printed.

TO CORRESPONDENTS.

HOUSE SLOPS AS A MANURE (B. W.).—Properly managed—that is, used sufficiently diluted with water, they are one of the most useful and most powerful of manures. You employed them undiluted, and, therefore, killed your plants. The quantity of ammonia was excessive, and acted as an irritating poison. Eight gallons of water to one gallon of urine are not too many. If you will expend threepence in buying the little manual, "Muck for the Many," published at our office, you will find in it full directions for the use of house-slops or sewage.

TREATMENT OF MEDINILLA MAGNIFICA AND HYACINTHS (Exoniensis).—The *Medinilla* we would leave alone as respects potting, but would not stint it as respects top dressing or weak manure watering. In dull weather, if much moisture accumulates round the bud, it is better to draw it out with anything of the nature of a syringe, or ease the pot gently over on the broad side. The plant with top dressing may remain for some years in such a large pot; and when repotted it should be done after the flowering stalks are cut off and growth has commenced. In such a place bottom heat is not necessary, but a little would be desirable after fresh potting. *Dracenas* will not object to a little bottom heat, but they do well enough without it. We would allow the *Hyacinths* to remain where they are, or in a cool greenhouse until the middle of March, and then they might receive all the light possible in the end of a greenhouse kept a little warmer. If all are wanted to a day, some plants may need moving backwards and forwards several times.

TREATMENT OF MEDINILLA AND LESCHENAUTIA TRILOBA (O. P. Q.).—See answer to "EXONIENSIS." If much cut back and so late as autumn, it will require the following summer to grow shoots that will produce flowers early the season following. When constant flowering is wanted we object to much cutting, except removing the flower-shoots when decaying. The position of the No. 2 plant, neither cut back nor pruned, explains the whole. The best means to prevent mildew on *Leschenaultia triloba* is to keep it very airy and in a temperature not below 45°. To get rid of it, if not too far gone, dust it with flowers of sulphur, and keep the plant in the shade for several days; at least, out of the sun; then shake all the sulphur off, syringe the plant well without letting the syringings fall on the soil, and, after standing in an exposed place for several days, and any of the mildew still presents itself, repeat the operation. Prevention is the great thing.

PROPAGATING-HOUSE (S. Bather).—We have answered a correspondent asking for similar information. Two four-inch pipes under each bed, and means for letting out heat for the atmosphere of the place, would do if you commenced at the end of February. If you meant to have Cucumbers all the winter, you had better have a pipe round the ends and front of the house, besides, for top heat. That might be the flow-pipe, and all below the beds return. At 1s. 2d. per foot you may easily calculate what the expense will be.

EXPLOSIONS IN FLUES (W—, Llandaff).—The chief causes of these are allowing them to remain after they are quite worn out and insecure, plastering them inside, the falling of pieces of that plaster and stopping the draught, and using in such circumstances the very worst of fuel as to making smoke and soot, and neglecting to keep the flue clean. The preventives are keeping the flue sound, using no plastering whatever inside of the flue, and keeping the flue clean. When flues are half filled with soot, not only is the heat from the fire in a great measure lost, but the soot is apt to take fire; and if the damper should happen to be in a little bit, the burning soot will be apt to cause an explosion, and the gases will force themselves through the bricks—and woe to any tender thing that comes in contact with the gases. In a long flue the damper is hardly necessary, draught can be easily regulated by the ash-pit door. Thoroughly to prevent explosions, when the flues are much used for forcing they should be cleaned two or three times instead of once a year.

CULTURE OF MARTYNIA FRAGRANS—SHOWY SCENTED ANNUALS (Yorkshire).—You will find that the best mode for rearing *Martynia fragrans* is to sow each good seed in the smallest pot you can find, and, when fairly up and growing, to break the pot, but still keep it about the ball, and place it as it is in the middle of a six or eight-inch pot filled with peat and loam, and water carefully until the roots come through the broken pot and fill the soil in the large one. Care must be taken that the soil in the large pot is not soaked until it is filled with roots. The plant dislikes interference with its root. Of annuals we would select the following:—*Browallia elata*, small blue flowers; *Calandrinia grandiflora*, blue; *Chloris radiata*, an ornamental Grass; *Didiscus cœrulea*, blue; *Datura ceratocaulon*, whitish; *D. chlorantha flore pleno*, yellow; *D. Wrightii meteloides*, white; *Martynia lutea*, yellow; *Mesembryanthemum glabrum tricolor*, low-growing; *Salpiglossis*, of colours; *Schizanthus retusus*; *S. Priestii*; *Portulacas*; *Ipomœa hederacea*; *I. limbata*; *I. limbata elegantissima*. We think that these will answer the purpose contemplated. The *Browallia* has small flowers; but produced in great abundance, and being of a firm upright habit, it contrasts nicely with Cockscombs and Balsams.

WORMS IN A LAWN (Jack of all Trades).—Lime water is the simplest and safest application to keep down worms. It should be applied twice a week for six weeks in the spring, and again in October. Lime fresh

from the kiln should be used. There is one way of bringing up all the worms to the surface on the instant, but it is dangerous, being a strong poison:—a lump of corrosive sublimate as big as a walnut, put into nine gallons of water, and when dissolved or melted, water the grass with it through a fine-rose pot, and every worm which it reaches will be up to the surface. We have seen them come up as fast as the bees when swarming. Small lumps of this poison of the size of a filbert nut in a gallon of lime water answer most effectually. To unturf and lay fine coal ashes under the turf, is a very good thing in all strong land to keep the grass and the worms on satisfactory terms with the owner, and more especially if the lawn can be surface drained at the same time. A turf ha-ha is a poor thriftless way of spending money, unless you had a military engineer to conduct the work.

PROPAGATING-HOUSE AND CUCUMBER-PIT (X. Y. Z.).—From the small sketch, we presume you propose dividing your house longitudinally into two pits, one in front for Cucumbers, and the one next the back for propagating. We presume also that you mean to train the Cucumbers over head above both pits. We would make the top of the brick pit level instead of sloping. That will give you more room for shelves, &c., if you desire such a plan. Had you a strong flue, brick on bed, running through the bottom of your Cucumber-bed, and coming back, brick on edge, through the propagating part, you would have plenty of heat. If you made a rough chamber over the flue, and then had some wooden slides in that chamber to open at will, you would do the same with two four-inch pipes going from the boiler through either chamber, and returning through the other. These would not do without the slides. If you wished to get rid of them, you had better take two pipes along the front for top heat, and rounding the other end divide the piping, taking one back through the bottom of each bed. You can judge of the expense of piping and flue, when we say at 14d. per foot, such piping at first would cost more than £5. A good little boiler and et ceteras and fixing, together with the amount for pipes, would be moderate at a dozen pounds. Pipes would be best ultimately. A greenhouse of such a size could be heated for some £8 for materials. The extra heat required demands more piping. We are supposing that you could do the most of the work without expense of carriages. There will be no difficulty about heating the Mushroom-house, especially with boiler and piping. If you had given us a rough plan of the place we might have advised better.

CUTTINGS (A Beginner).—We think you can better answer the question as to the number of cuttings than we can do, as we know nothing of the internal arrangements of your 12-feet-long-by-12-feet-wide pits. If every cutting was placed in the smallest 60-sized pots, you could soon see how many of these you could hold in a yard, and get at the result at once by common multiplication. We generally keep our cuttings in a small room, either in pots or boxes, in winter—say one inch for a Calceolaria, half an inch for a Verbena, and one inch and a half for the smaller kinds of Scarlet Geraniums; but then we take means to thin them, or plant them out in temporary beds by March, as otherwise they would smother each other. Giving each a separate pot and getting it established is the best plan for getting nice plants at the least trouble, but then you must give them more room. In such a sized pot we strike and keep on through the winter from six to a dozen young plants, according to what they are. The weather was so open and mild before the frost came, that almost everything exposed to the frost where intense has suffered, and hardier things than Celery. We threw a little litter along the sides of the beds, and a little across the surface—leaving a good bit of foliage out, and, when the frost got sharp, placed spruce fir boughs along the rows; and now, with the exception of the top leaves, ours is all right and sound. Such lessons are the hard knocks of experience, that make us learn whether we will or not.

A COLD PIT (A Devonshire Subscriber).—The shape of the house will do very well for what you propose; but with the exception of the length, 40 feet, and the back roof to be hipped, we know nothing more of the contemplated size or contents. All that can be said of expense is delusive, unless the mode of building be taken into account. If made entirely of wood and glass, as Mr. Rivers builds his orchard-house, his builder, I dare say, would manage such a house for about £40. If you go to brick walls you must pay more, and all that you have for ornament will cost just so much more. For something like that money you would have to use British sheet glass, what is called fourths at about 2d. the foot; if you preferred thirds, it would be nearly 3d. per foot; and Hartley's rough patent is from 3d. per foot; and ribbed patent is, we believe, more, and in proportion to weight and thickness. The above sheet is glass about 16 ozs. to the foot, heavier will be so much more. Rafters for such a house should be three inches and a half by one inch and a half, and stand about twenty inches apart, to receive glass twenty inches by twelve inches. We think you would gain nothing by having the back hipped-roof slated. If you had no means of heating, the slate would be an advantage in winter; but unless you heated the house you could not keep the plants in it you specify, and, therefore, we would decidedly have glass there as well as in front. Most back sheds in gardens would be as cheap if roofed with glass, and then how useful for many things they would be.

TWELVE FUCHSIAS FOR EXHIBITION AND THEIR TREATMENT (Young Beginner).—You are now three months behind time in preparing first-rate Fuchsias to win prizes in 1861, at any respectable exhibition on this side of Ganderclough; but here they are, six of the best whites, and six to match them from the reds:—

Whites.—Queen of Hanover, Royal Victoria, England's Glory, Clio, Silver Swan, Maid of Kent, or Fairest of the Fair, or Duchess of Lancaster, all good white kinds; and Venus de Medici, a fine lilacy kind.

Reds.—Souvenir de Chiswick, Wonderful, Prince of Wales, Prince Albert, Catherine Hayes, Emperor Napoleon, Charlemagne, Tristram Shandy.

To win a prize worth fighting for, with a selection from all these beautiful kinds of show Fuchsias, one would need to begin at the end of October with plants nine months old, or such as were struck last spring, and did uncommonly well all that summer and autumn. At the end of October the pots should be turned on one side till the mould got as dry as March dust; then the plants to be cut back to the very collar, so as to get up one strong middle stem from the very power and centre of the roots, so as to look as like a Christmas tree as a Spruce Fir is to a Norfolk Island Pine. A specimen Fuchsia which has not a centre stem like such trees, and is not as equally balanced with shoots from the rim of the pot as any Conifer in this world, and not to be under five feet high, or over eight feet in height, is not worth talking about at a respectable society. After cutting

them so close, shake off all the dusty earth and the dying small fibres of roots, but no more, and by no means cut their roots close as a Geranium roots. You want all the force of all the sap in all the roots to throw up a prodigious fine stem for the centre of first-rate specimen plants, as you are not yet so well up to the mark as first-class exhibitors with whom you may have to compete. If your plants are all ready, and you have twenty of them to stand for a dozen, in case of mishaps, by the middle or end of November, and pot them into as small pots as you can get their roots into without pressing them, for a first start, and the soil is good enough for a first-rate Geranium, you are all right. The next thing is a mild hotbed inside a house, to give them bottom heat the whole winter, and a temperature of about 60°, with air sufficient to keep them from drawing slender till the spring is on with sunshine to raise the heat to 80° or 90° in the middle of the day. As soon as one set of pots got full of roots there must be a shift till they are in their blooming-pots, and by the 1st of May the shortest of them should measure just four feet without the pot. Of course, if you are not up to every little move in turning the plants round and round to the light, syringing when it is necessary, stopping side-shoots just at the proper time and joint, and looking after them in every way as a mother would watch over her first-born baby, some one will be sure to beat you after all; but if you make up your mind to win, you are almost certain to succeed; but you would need the head of a very first-class exhibitor, and all his means of doing them to succeed after being so late in the field as the beginning of February.

MANURE FOR POTATOES (L. D. W.).—On your light sandy soil manured with guano for preceding crop, soot, as you propose, will be a very good application. We should sow by hand on the surface, at the time of the digging for planting, a mixture of fifteen bushels of soot and five bushels of salt per acre. If we could obtain shoddy at a moderate price, we would certainly try it as a manure for Potatoes. We believe it would be very successful. If you try it you will much oblige us by letting us know the result. The nearest woollen factory would be the place to obtain it from. Half a ton per acre would be a good dressing spread over the surface and dug in.

POTTED VINES IN ORCHARD-HOUSE—SHIFTING CAMELLIAS (Peckham Subscriber).—We fear we forgot to notice the Vines in the cold orchard-house. They will do very well there in pots. Keep plenty of air on, and keep the plants as backward as you can. The plants will have the advantage of those on walls, &c., from being covered with glass, which will enable you to increase the heat in autumn and keep off the heavy rains of that season. If your wood is all right there is no question of the Grapes doing well. The best time for shifting *Camellias* is just as soon as fresh growth is taking place after flowering. Some prefer doing it after the shoots are set—that is, just when stopped growing. Pruning when necessary should be done directly after blooming. If done severely, the plants should be placed in a nice, sweet, moist heat—say of from 60° to 65°, shortly afterwards. When the young shoots have pushed from half an inch to one inch is the best time to shift, if necessary. *Camellias* do not require that every year. We have had large plants that, making sure of the drainage, had nothing done to them, except removing a little of the surface soil and replacing by fresh, for from five to ten years. Ants are very destructive in many cases on Strawberries or Peaches! Water with guano water, or throw it in their runs; or mix arsenic with sugar and water, and place it so that ants only can get at it—and no pet animal you may have.

CUTTING ASPARAGUS (A Plain Gardener).—Let the shoots be six inches above the surface before you cut them, and then cut them just within the surface. The only criterion of excellence is size, the largest being the best. When allowed to grow six inches high before being cut, the whole of that length is edible.

EVERGREENS FOR A CONSERVATORY (J. N.).—A Norfolk Island Pine (*Araucaria excelsa*), is the most noble of all our evergreens to plant under the dome of a large conservatory, and *Camellias* are by far the best kind of plants to place against the back wall of such a fine conservatory; and in these days money can furnish such plants of *Camellias* as will be sufficient to cover every brick of the twelve-feet high wall in one week, even if the wall were as long as the Houses of Parliament. If there are cross-tie bars in the roof, a climber might be planted just under any or all such supports and between the *Camellias*; such climbers, ultimately, to run up the back wall by a single stem, and branch off at the top of the wall, and after that the pruning to extend no lower than the top of the wall; the front border of such a conservatory being reserved for the more refined or more delicate climbers. This back border with strong loamy soil for the *Camellias*, will be best fitted for the more rapid growers and more robust climbers—say *Tacsonia mollissima*, *Passiflora* of sorts, as *Bilottii*, a very strong grower, *Clowesiana* and *Campbellii*, three hybrid half-hardy *Passifloras*.

PLANTS FOR CONSERVATORY PILASTERS (T. Jones).—For the roof, we would advise *Mandevilla* for the centre, *Passiflora cœrulea* for one end, and *cœrulea racemosa* for the other, the latter having a reddish-purple colour. For the pilasters the following will do well:—*Billardia longiflora*, crimson; *B. angustifolia*, cream coloured; *Kennedyia Marryattæ*, scarlet; *K. Comptoniana*, blue; *K. monophylla*, purple; *K. nigricans*, dark purple; *K. inophylla*, scarlet; *Brachysema latifolia*, scarlet; *Podolobium scandens*, yellow; *Jasminum volubile*, yellow; *Sollya heterophylla*, *S. angustifolia*, blue. Plant in equal portions of heath soil and loam, and give some silver sand in the soil about the ball when planting them.

WHAT MAY BE GROWN IN A VINERY (A Garden Labourer).—You may grow Peaches on the back wall if the Vines are grown and pruned on the spur system, and are not nearer each other than four or five feet. You will have to study what Peaches and Vines require, and will be obliged to get fair crops of each to make a compromise between the two. Either one or other in the house would enable you to treat either one better; but good crops of both are often obtained. Of course, if you have shelves on the back wall, that would prevent you having Peaches there; but you might have the back wall clear for Peaches, and suspend shelves from the rafters for Strawberries—say one five feet from the back, and another four feet farther down. Whether a stage, or pit, will depend on what you want. Whether you have stage or pit, if you have Peaches on the back wall neither should be above 3 feet or 3½ feet in height, or you will shade the back—in fact, if you grew tall plants in the house, they too would shade the back wall. If you had plenty of fermenting matter—such as tan, tree leaves, and dung, &c., the filling the pit with these would enable you to

break your Vines nicely, and also furnish you with a little bottom heat for Beans, &c. A stage would be the best for Geraniums and plants of that sort. You might combine the advantages of both by having a pit for fermenting matter when desired, and a sparred table to set across it when you wished the plants to stand clear and on a dry bottom.

NAME OF FERN (*Alethea*).—It is *Lastrea spinulosa*.

NAMES OF PLANTS (*D. Davies*).—Yours is *Pultenaea sub-umbellata*. Neither of the parties you mention will undertake to plant flower-beds they never saw, nor will any one who has any regard for his gardening reputation. (*An Old Subscriber*).—Your everlasting flower is *Astelma eximium*, formerly called *Gnaphalium eximium*.

POULTRY AND BEE-KEEPER'S CHRONICLE.

SITTINGS AT THIS SEASON.

ALTHOUGH we have long advocated that not more than seven eggs be put under hens at this season of the year, yet seeing that almost every yard is in arrear, and that in many places where at this season there are ordinarily chickens by the score there are none now, it is well to vary a little in order to make up for lost time, and to use such care as shall counterbalance adverse seasons. It is also encouraging to know that of late years February has been more favourable to chickens than April.

Instead of seven put eleven eggs under each of four hens; failing four broody at the same time under two hens. Eggs never have been, and never will be, as productive in January as in May, and you may then fairly expect that half, or little more than half, will produce chickens. By sitting them at the same time, if four, from them you will have two full nests. If two, you will have one. As the chickens will be coming off at the same time, it is probable the four hens, from forty-four eggs, will not bring more than twenty-four chickens. Then give eight to each of three hens; if only sixteen or seventeen, divide them between two; and so on in proportion, supplying the one that has lost her nest, in making up the others, with fresh eggs.

It is easy on a bright sunny day, by holding the eggs against the light, and looking at them through the hand, held telescope fashion, to see whether they contain chickens or are addled. This may be safely practised at the end of ten days or a fortnight; and it is valuable inasmuch as it saves time—four or two nests being tested in this manner to complete three, two, or one, according to the fecundity of the eggs, and one of the hens thus deprived of her original eggs being put on fresh ones: thus, all the eggs may be fairly supposed to be productive, and three or four sitting hens do the work of five or six. Although these chickens will have to contend with long nights and chilly weather, yet this much is cheering—every day they live the weather gets warmer, and every night gets shorter. Nights must be shortened by feeding by candlelight twice, or it may be three times, after the hen is at roost in her rip; and above all, reject that poor economy which denies to the hen her portion of the night meals. The chickens must be kept warm by nourishing food, but their growth will also depend much on the warmth and comfort of the hen. If her crop be full, she will settle quietly down, and emit warmth enough to nourish and comfort her brood; but if she is hungry and restless, she will allow no rest to her chickens, nor can she give them the heat they require. These precautions are the more necessary, because the chickens, if cared for as we have described, will grow fat, and it will be as much as the hen can do to cover them well through the night.

MANAGEMENT OF POULTRY FOR USE.

WE have twenty-five hens and four cocks. Three or four of the hens are old ones, and the remainder were hatched between the middle of April and middle of June last year; they are fed twice a-day on barley, and have the run of a small meadow, about one acre, which has been enclosed with wire to keep them within bounds. Some of the hens have very red combs, but as yet we have not had more than six eggs.

We propose shutting up six of the finest pullets and a cock in a small run that we have, so as to breed from them for stock; and breed from the outsiders for table. The whole of the fowls are Grey Dorkings, and are very fine birds; they were hatched from eggs supplied by Captain Hornby, at £2 2s. the sitting; they are all in excellent health, have a clean comfortable hen-house, the run of the farmyard and meadow, and yet they will not lay. We do not intend exhibiting, but merely wish to supply the table, and have some nice birds to look at.—IGNROAMUS.

[You may much improve your feeding by substituting three

meals for two, and giving for the first and last ground food. If you wish to fatten a fowl, you must keep it constantly in a state of repletion, to induce sleep, warmth, comfort and thriving; but if health and fertility be your object, three moderate meals will attain it better than two copious ones, and these should be just enough to satisfy hunger—no more is required. Temperature will always have much to do in making fowls lay, but no warmth will make an old hen lay till the proper time of year, which is in February and March. Pullets lay earlier, but the first half of their laying should never be depended upon for stock. You may easily keep and breed from the number of fowls you mention on the space you have. If you shut up your best fowls, be careful to give them as much room as you can. We are not sure, if all your birds are, as you say, well-bred, that you will not do as well by letting all run together, by noting where the hens lay from which you particularly wish to breed, and sitting their eggs as nearly as you can—thus giving every chance to your stock. As you will never breed all good, even from good ones, and as it is necessary to have a large number to select perfect birds from, we would rather advise you to hatch all together, to eat the faulty and indifferent, and to keep the best. Few things are more difficult than to breed all good fowls even from perfect parents, and nothing is easier than to please the eye where there is a large number to choose from. From your description, yours is just the place where the last may be easily done.]

ULVERSTON POULTRY SHOW.

THE fifth annual Exhibition of poultry was held in the Victoria Concert Hall, Ulverston, on Wednesday and Thursday last, and, we are glad to say, was an improvement on the four preceding it. When we take the late severe season into consideration, we think the management cannot be otherwise than highly gratified at having a more numerous entry than hitherto. That this Show, which is probably now second to no local show in the kingdom, is worthy encouragement there cannot be a doubt; and we are glad to find that the untiring exertions of the Secretaries and Committee have been crowned with success. To attain success and keep gaining ground in poultry exhibitions has been found a difficult matter to overcome. In some there has been a great falling off and others have been discontinued, whilst many can just exist, and few are in the ascendant. Amongst the last-named we are glad in being able to place Ulverston; and we have no fear of its continuing to gain ground whilst the same unanimity of feeling and the gratuitous services of an active working Committee, which are at present laying their shoulders to the wheel, continue together. As to the attention paid to the birds committed to their care, we can this year only endorse what we have said on former occasions—that it was all that could be desired, the birds were well fed, kept in a cleanly state, and in a lofty and airy room.

As regards the different classes, we can only say that in each very few inferior birds could be found; indeed, looking over the prize list, we think, will be a sufficient guarantee as to quality: and in which will be found the names of Messrs. Dixon, Moss, Archer, Ballance, Berwick, Brown, Teebay, Dawson, J. and J. Robinson, Fletcher, Grimshaw, Mrs. Seamons, Kerr, Munn, Hindson, Miss Musgrove, Sainsbury, &c.

We think we ought not to omit to mention that the Secretaries have not been unmindful of the call made by exhibitors to try to induce railway companies to convey the birds carriage free one way, the same as is done with cattle to agricultural Shows; but, we regret, without effect. We trust, however, that others will do the same, and agitate the matter until we find this an accomplished fact.

In several classes we noticed the marked effect the severe season has had upon many of the fowls, especially hens, which have not yet regained their wonted bloom, looking pale and somewhat sickly, and which marred considerably the appearance of some splendid pens.

There were three pens of hybrids in the room, which attracted a good deal of attention. One a cross between the red Grouse and black Spanish, another between the wild Pheasant and Game Bantam, and the other between the wild Pheasant and laced Bantam.

In concluding our remarks, we must not omit to notice the neat embossed cards given as third prizes, and which have been advocated in *THE COTTAGE GARDENER* for some time.

The Judge, Mr. Challoner, took great pains, and, we believe, gave entire satisfaction.

The following is a list of his awards:—

SPANISH.—First, J. R. Rodbard. Second, R. Teebay. Third, E. Brown. Commended, T. Robinson; R. Teebay.

DORKING.—First, T. W. Hill. Second, E. Sergencson. Third, J. Robinson.

GAME (Black-breasted and other Reds).—First, W. Dawson. Second, J. Fletcher. Third, T. Robinson. Highly Commended, C. B. Kennedy; J. Swainson; T. Robinson.

GAME (Duckwing and other Greys and Blues).—First, J. Brown. Second, W. Brocklebank. Third, J. Hindson. Highly Commended, T. Robinson; R. Tate.

GAME (Whites and Piles).—First, W. Newby. Second, Mrs. Swainson. Third, J. Martin. Highly Commended, T. Robinson. Commended, F. C. Ellison.

GAME (any other variety).—First, W. Dawson. Second, M. J. Cranke. Third, W. Bentley.

COCHIN-CHINA (any colour).—First, T. Stretch. Second, H. Tomlinson. Third, J. Cattell. Highly Commended, E. Smith. Commended, Mrs. W. A. Mocatta.

HAMBURGH (Golden-pencilled).—First, J. Martin. Second, T. Robinson. Third, J. Munn. Highly Commended, J. Munn; T. Robinson. Commended, J. Robinson.

HAMBURGH (Silver-pencilled).—First and Second, W. H. Kerr. Third, J. Munn.

HAMBURGH (Golden-spangled).—First, S. H. Hyde. Second, R. Tate. Third, W. R. Lane. Highly Commended, J. Robinson. Commended, J. Dixon; W. C. Worrall.

HAMBURGH (Silver-spangled).—First, W. Cannan. Second, J. Robinson. Third, J. Fielding. Highly Commended, R. Teebay; J. Dixon; G. R. Atkinson.

POLANDS.—First, Second, and Third, J. Dixon.

ANY OTHER DISTINCT OR CROSS BREED.—First and Second, R. Teebay. Third, R. Tate. Commended, J. H. Myers; Mrs. C. B. Kennedy.

BANTAMS (Gold and Silver-laced).—First, E. Yeardeley. Second, T. W. Hill. Third, T. H. D. Bayly. Highly Commended, E. Yeardeley. Commended, J. Dixon.

BANTAMS (Game).—First, J. Bowden. Second, M. Turner. Third, T. H. D. Bayly. Highly Commended, J. Penny; J. Mashiter; W. Silvester; J. Camm. Commended, I. G. Park; J. Hull. (Extraordinarily good class.)

BANTAMS (any other variety).—First, T. H. D. Bayly. Second, E. Hutton. Third, W. C. Worrall. Highly Commended, F. Hardy.

DUCKS (Aylesbury).—First, Second, and Third, Mrs. M. Seamons. Highly Commended, S. Barlow.

DUCKS (Rouen).—First, T. Robinson. Second, J. Dixon. Third, E. Sergencson. Highly Commended, T. Robinson; W. H. Kerr.

DUCKS (East Indian).—First, J. R. Blakiston. Second, F. W. Earle. Third, G. S. Sainsbury. Highly Commended, C. Ballance.

DUCKS (any other variety).—First, T. H. D. Bayly. Second and Third, J. Dixon.

EXTRA PRIZES.

GAME COCKS.—Piece of Plate, or £7, G. W. Moss. Piece of Plate, or £3, E. Archer. Third, J. Fletcher. Fourth, A. Hampson. Fifth, T. H. D. Bayly. Highly Commended, E. Archer; G. W. Moss; G. C. Whitwell. Commended, J. Hindson.

GAME CHICKENS.—Piece of Plate, or £3, E. Archer. Second, J. Brown. Third, J. Boulton. Fourth, G. W. Moss. Highly Commended, T. Orr. Commended, W. and N. Grimshaw; J. Boulton; T. W. Hill.

GAME BANTAM COCK.—First, Miss V. W. Musgrove. Second, R. Moon. Third, T. H. D. Bayly. Highly Commended, J. Camm; D. Parsons; E. Sergencson.

CUMBERLAND AND WESTMORELAND
ORNITHOLOGICAL SOCIETY'S EXHIBITION OF POULTRY,
PIGEONS, AND CANARIES.

THIS was held in the Athenæum, Lowther Street, Carlisle, on January 25th, and 26th. The Judges were:—Of Poultry, Mr. Shorthose, Newcastle, Mr. Bagnall, Newcastle; of Pigeons, Mr. A. Moffatt, Edinburgh; and of Canaries, Mr. D. Graham and Mr. J. Graham, Carlisle. The following is a list of their awards:—

GAME COCK (Extra Prize).—First, T. Robinson, Wigton. Second, J. Fisher, Sandwith, near Whitehaven. Third, J. P. Toppin, Carlisle. Highly Commended, J. R. Rodbard, Wrington, near Bristol; Mrs. Brough, Carlisle. *Cockerel*.—First, Mrs. Parker, Coalstaith, Brampton. Second, W. Blenkinsopp, Mire Gate Cottage, near Abbey. Third, J. Gaddes, Carlisle. Highly Commended, Mrs. Parker; J. Murray, Gretna, N.B. Commended, J. Brough, Carlisle; W. D. Hastwell, Carlisle; R. Wells, Carlisle.

GAME (Black-breasted and other Reds).—First, D. Graham, Westlinton, Cumberland. Second, W. D. Hastwell, Carlisle. Highly Commended, T. Robinson, Wigton; G. Bell, Wigton.

GAME (White and Piles).—First, E. Wells, Strickland Gate, Kendal. Second, Miss J. Hastwell, Carlisle. Highly Commended, J. Holliday, Westlinton, Cumberland; H. Adams, Beverley; F. C. Ellison, Low Sizergh, Milnthorpe; H. Beldon, Bradford.

GAME (Duckwing and other Greys and Blues).—First, T. Dodds, Owendon, Halifax. Second, R. Thompson, Moresdale Hall, near Kendal. Highly Commended, H. Adams, Beverley. Commended, A. B. Dyas, Madeley, Salop; W. Dawson, Selly Oak.

GAME (any other variety).—First, W. Dawson, Selly Oak. Second, A. B. Dyas, Madeley, Salop. Highly Commended, Mrs. Brough, Carlisle. Commended, H. Beldon, Bradford.

SPANISH.—First, W. Cannan, Bradford. Second, J. K. Fowler, Aylesbury. Highly Commended, J. R. Rodbard, Wrington; Capt. Heaton, Terr Bank, Lower Broughton, Manchester; G. Robinson, Kendal. (A very good class.)

DORKING (Coloured).—First, J. Robinson, Garstang. Second, T. W. Hill, Heywood, near Manchester. Highly Commended, T. W. Hill; Miss Bell, Woodhouselees; Rev. E. Cadogan, Walton Parsong, Warwick. COCHIN-CHINA (any variety).—First, H. Beldon, Bradford. Second, E. Smith, Middleton, near Manchester. Highly Commended, J. Cattell, Birmingham. Commended, Miss Aglionby, Wigton Hall; J. Robinson, Garstang.

HAMBURGH (Golden-pencilled).—First, J. Robinson, Garstang. Second, R. Hemingway, Shelf, near Halifax. Highly Commended, T. Proctor, Settle, Yorkshire. Commended, W. Cannan, Bradford.

HAMBURGH (Silver-pencilled).—First, S. Shaw, Stainland, near Halifax. Second, J. Robinson, Garstang. Highly Commended, S. Shaw; W. Cannan, Bradford.

HAMBURGH (Golden-spangled).—First, J. Dixon, North Park, near Bradford. Second, W. R. Lane, Birmingham. Commended, J. Robinson, Garstang; H. Adams, Beverley.

HAMBURGH (Silver-spangled).—First, J. Dixon, North Park, near Bradford. Second, J. Robinson, Garstang. Highly Commended, W. Cannan, Bradford. Commended, E. Smith, Middleton, near Manchester.

ANY VARIETY.—First and Second, J. Dixon, North Park, Bradford.

THIRD, T. Blakistone, Settle. Highly Commended, J. K. Fowler, Aylesbury. BANTAMS (Game).—First, Miss Aglionby, Wigton Hall. Second, J. R. Rodbard, Wrington. Highly Commended, C. W. Hall, Poulton-le-Fylde. Commended, J. R. Blakistone, Settle; W. R. Wells, Carlisle.

BANTAMS (Gold-laced).—First, S. Shaw, Stainland. Second, J. G. Park, Moresby, near Whitehaven. Highly Commended, T. H. D. Bayly, Ickwell House, near Biggleswade; J. Dixon, North Park.

BANTAMS (any variety).—First, S. Shaw, Stainland. Second, E. Hutton, Pudsey, near Leeds. Commended, J. G. Park, Moresby.

DUCKS (Aylesbury).—First, J. K. Fowler, Aylesbury. Second, J. Robinson, Garstang. Commended, T. W. Hill, Heywood; Rev. E. S. Goodhart, Harrington; Miss Bell, Woodhouselees.

DUCKS (Rouen).—First, Miss Bell, Woodhouselees. Second, S. Shaw, Stainland. Commended, J. Dixon, North Park; J. K. Fowler, Aylesbury. Sir W. Brisco, Crofton Hall.

GESE (any variety).—Prize, D. Hyslop, Denton Hall, Cumberland.

TURKEYS.—Prize, J. Dixon, North Park, near Bradford.

PIGEONS.—*Almond*.—First, J. Bell, Newcastle-upon-Tyne. Second, J. Cochrane, Glasgow. Commended, E. A. Hargrove, Wandsworth, Birmingham. *Tumbler*.—First, E. A. Hargrove, Wandsworth, Birmingham. Second, W. Tinning, Carlisle. *Carriers*.—First, H. Yardley, Birmingham. Second, W. Cannan, Bradford. Highly Commended, H. Yardley, Birmingham. *Pouters*.—First, G. J. Maclean, Edinburgh. Second, W. Cannan. Third, J. Cochrane, Glasgow. Highly Commended, A. Cattley, York. *Jacobins*.—Silver Medal and First, T. T. Barker, Charnock, Chorley. Second, J. T. Lawrence, Liverpool. Highly Commended, T. T. Barker; S. Shaw, Stainland, near Halifax. Commended, T. Armstrong, Goslin. (A very fine class.) *Fantails*.—First, S. Shaw, Stainland near Halifax. Second, T. Ellington, Woodmansey, Beverley. Highly Commended, R. Nixon, Dearham; J. Cochrane, Glasgow. Commended, J. B. Edge, Aston New Town, Birmingham. *Owls*.—First, S. Shaw, Stainland, near Halifax. Second, T. T. Barker, Charnock, Chorley. Commended, D. Hyslop, Denton Hall; R. Nixon, Dearham. *Trumpeters*.—First, S. Shaw, Stainland, near Halifax. Second, A. Cattley, York. Highly Commended, F. Key, Beverley. *Barbs*.—First, S. Shaw, Stainland, near Halifax. Second, Rev. E. Goodhart, Harrington. Highly Commended, J. H. Craigie, Woodlands, Chigwell, Essex. Commended, T. Ellington, Woodmansey, Beverley. *Turbits*.—First, T. T. Barker, Charnock, Chorley. Second, E. A. Hargrove, Wandsworth, Birmingham. Highly Commended, T. T. Barker; S. Shaw, Stainland, near Halifax. Commended, J. W. Lowson, Lawgate, Beverley. *Open Class*.—First and Third, S. Shaw, Stainland, near Halifax. Second, Rev. E. S. Goodhart, Harrington (Silver Runts). Fourth, E. A. Hargrove, Birmingham. Highly Commended, J. Dunne, Carlisle (Doves); J. E. Mapplebeck, Birmingham (Runts); S. Shaw, Halifax; F. Key, Beverley (Nuns); W. Cannan, Bradford; J. B. Edge, Birmingham. Commended, A. Cattley, York. (A very interesting class.)

CANARIES.—*Yellow Belgians*.—First, T. Baron, Kendal. Second, A. Jennison, Kendal. Highly Commended, E. Richardson, Hensingham. *Ruff Belgians*.—First, H. Richardson, Hensingham. Second, A. Jennison, Kendal. Highly Commended, T. Baron, Kendal. *Scotch*.—First and Second, R. Davidson, Carlisle. *Yellow Mules*.—First, H. Richardson, Hensingham. Second, R. Foster, Carlisle. Highly Commended, W. Johnston, Carlisle. *Buff Mules*.—First, A. Jennison, Kendal. Second, T. Baron, Kendal. Highly Commended, R. Foster, Carlisle. *Yellow Piebalds*.—Prize, R. Foster, Carlisle. Highly Commended, W. Graham, Carlisle. *Buff Piebalds*.—First, A. Graham, Carlisle. Second, H. Richardson, Hensingham. Second, W. Nixon, Carlisle. Highly Commended, A. Graham, Carlisle.

CRYSTAL PALACE EXHIBITION OF BRITISH
AND FOREIGN BIRDS.

THE annual Show of British and Foreign Birds at the Crystal Palace commenced on Saturday the 26th inst. The specimens were of a finer quality than those exhibited on previous occasions. This may be accounted for by the increasing interest felt in this Exhibition, and the stimulus it gives to amateurs.

Visitors from various parts, charmed by the beauty of the birds at the former Shows, have, in many instances, become competitors. The collection would, no doubt, have been much more numerous had not the season been so severe and unfavourable. Among the British birds were some very beautiful and novel varieties of the Bullfinch, both black, pied, and yellow. A fine specimen of the latter belonging to the Hon. A. D. Willoughby, deservedly obtained a prize, as did also the

black and pied varieties, one of the former belonging to Mr. H. W. Whitaker, and the latter to Miss Ida Verner.

Our favourite Blackbird was well represented. A pied variety, No. 219, was very highly commended, and No. 215, with a white throat, was a noble bird, and highly commended. There was also a very peculiarly and beautifully coloured little bird belonging to the Hon. A. D. Willoughby, stated to be a Mule between the Canary and Bullfinch; likewise a very fine hybrid between the male Goldfinch and hen Bullfinch belonging to Mr. E. Hawkins, which obtained a prize.

Most of the British Birds were very fine in feather, and prove that with proper attention our little songsters, although in captivity, can be kept in as fine a condition as when at large.

The Foreign Birds were unusually fine, some of the Parrots and Cockatoos being very beautiful both in plumage and form. Two magnificent specimens of the Parrot tribe from the South Sea Islands and Western Australia respectively, were very much admired for their elegance of form and beauty, and attracted great attention.

The show of Canaries did not appear to be so numerous as on the previous Exhibitions, but were of a very superior quality. Mr. E. Hawkins, of Bear Street, Leicester Square, was the greatest contributor, and was well rewarded for his skill and care by obtaining the largest amount of prizes.

The competition on the whole was more extensive than on former occasions, and the sale of several of the birds proved the admiration with which they had been regarded.—N. G.

AMONGST so numerous a collection, embracing as it did nearly a thousand specimens, it would be very difficult to mention any one class in particular, as all deserved general commendation.

The Collection of Canaries were good, especially the Norwich classes. Of the London Fancy and Lizard classes too much cannot be said in commendation. They must have been seen by a true fancier to appreciate their quality. Some of the Belgian birds were good, and showed a decided improvement from the coarse-feathered birds so often shown as Belgian birds: The fanciers are beginning to find that by really good judges the birds of position only are prized.

In the distinct varieties there were some very beautifully variegated Norwich birds, and a distinct specimen of the pure St. Helena Canary, which deserved especial notice.

The classes of Mules were very meritorious, and showed great judgment in producing such beautiful birds. They were generally admired.

There was also a variegated Bullfinch entered as a Mule, which, in reality, was not so, although much to be admired.

The Foreign Birds were both rare and beautiful, and in abundance. Among them were some very rare and fine specimens of Macaws, and the still more rare South Sea Island Parrot, and mealy Roselle Parrot of Sydney.

Mr. Hawkins, whose name figures so prominently in the prize list, contributed largely to the Exhibition of foreign birds. All deserve the highest commendation.

The British Birds were much admired, and added much to the interest of the Exhibition, as many were there that the visitors had never seen in cages before.

Some variegated Crows caused great attraction. The Blackbirds and Thrushes were in excellent condition, and showed an improvement in the condition to former years. The Nightingales were also in the best possible condition, but we regret the sound of their voices was not heard, although with the notes of other sweet warblers the Palace echoed.

Too much cannot be said in praise of the Secretary, Mr. Houghton. He was indefatigable in his attention to the comforts of the birds. The cages were arranged up the centre of the tropical-temperature part of the Palace, and the beauty of the flowers and the evergreens added much to the attractions. It was a treat long to be remembered.—T. MOORE, one of the Judges.

MANAGEMENT OF THE GREY PARROT.

IN answer to a "CONSTANT SUBSCRIBER," I beg to inform him, that having kept the Grey Parrot for eight or nine years, I have found the following diet to answer in every way—viz., Canary seed, dry bread, plain biscuits, a little tapioca or sago pudding, an occasional white peppercorn or two, a total exclusion of meat, bones, or anything the least greasy or salt, a

plentiful supply of clean water, and some bread dipped, not soaked, in milk occasionally. My bird never picks its feathers off, and is always in good health. They require to be kept warm. As to its breeding in this country I cannot speak. Andrews, of the Pantheon conservatory, Oxford Street, says it does not breed in a state of domestication.—A PARROT-KEEPER.

MEMORIAL FROM A MULE CANARY.

MY DEAR MR. EDITOR,—Knowing you are a friend to humanity and a lover of the feathered tribe, as well as the flowers of the garden and the herbs of the field, will you permit a poor little bird to send you a short account of his present distress? and should you recommend any remedy which might effect a cure, I would sing you one of the prettiest songs ever warbled by a bird of my species—no mean kind, for I am a Goldfinch Mule:

My father was a Goldfinch and my mother a Jonque Canary. As editors and poets, and men of learning and women of fame, cannot help sometimes singing their own praises, perhaps I may be allowed to warble a little song in praise of myself. My beauty consists in the variety of my colours and the regularity with which they are arranged, every feather of each wing being alike. My breast is a light brown, the lower feathers of my wings pure white, and my tail, if possible, whiter. My little feet are black, my beak just like my feathers, and my eyes resemble those of my mother. I have the peculiar *side-to-side* movement of the former, and the full melodious voice of the latter. But now comes the sad part of my tale.

I was to have been exhibited on the 11th of last month at the Southampton Bird Show; indeed, matters had gone so far, that my entry was made. A small cage had been prepared for me, and so careful were they over me, that a bird-keeper was sent for to take me out of the aviary cage. Of course, I resisted, and the more his large hand pursued me, the higher I flew. At last he caught me, and, alas! alas! one of my poor little wings from some cause or other got injured, and so the only figure I made at the Exhibition was—my name among the entries.

Now, my dear Mr. Editor, can you or any of your kind-hearted readers tell me what to do? At first my perches were taken away, but that did no good, for I flew about the cage and made my wing worse. Then I was taken out in the hand and laid upon my back and a bit of string tied round both wings to keep the injured one down, but that was not to be borne for a moment, and with my beak and claws I soon put an end to that. My appetite is excellent, I enjoy my chopped eggs and seed and apple, sing as well as ever, only the lower part of my right wing stands up day and night, but no part is broken because I can stretch it quite out as well as the other. Do you think it is a strain or sprain, Mr. Editor? I am not a juvenile—four years and a half old, so, perhaps, there is less hope of a cure, even if any could be recommended.

I am more emboldened to write to you, my dear Sir, because some months since a Spanish cock wrote you a letter about his adventures, which certainly did him great credit. My history is a remarkable one, and should you wish to have it, *multum in parvo*, let me know, and believe me—Your grateful little sufferer, HYBRID.

[We shall be glad of a reply from any practitioner to this memorial, and we shall most readily publish both that and the proffered biography.—Eds. C. G.]

MORTALITY AMONG BEES.

THE wet summer of 1860 being followed by so severe a winter, has proved most disastrous to bee-keepers. I, myself, had the mortification on the 27th of January*, of finding a dead queen (fortunately not a Ligurian), on the floor-board of one of my hives. The loss of one out of a dozen stocks is, however, trifling compared with the general destruction around me. "All dead," varied occasionally with, "only one left," is the almost invariable reply to all inquiries after bees. Nor am I disposed to imagine this misfortune by any means peculiar to the west of England. A friend who writes to me from a distant county says—"We have had a sad season for apian pursuits this year. 1860 will be of gloomy remembrance in the calendar of

* On this day I saw the first load of pollen carried in by Ligurian as well as common bees. Mr. A. Neighbour tells me he saw his Ligurian bees at Dorking collecting pollen on the same day

bee-keepers, as far as Essex is concerned. I had good hopes of my last hive (having previously lost three), but two days ago I found that the fourth was also gone. I had intended changing the floor-board for a fresh and dry one as soon as the frost gave way; the latter has done so, but I find my poor little friends past all care. I am now a complete bankrupt in the bee line. My only assets are a plentiful stock of straw hives, 14 inches by 7 inches deep, flat, and with openings at top, thoroughly painted, also a stock of floor-boards, adapting-boards, caps, and glasses, and NO BEES."

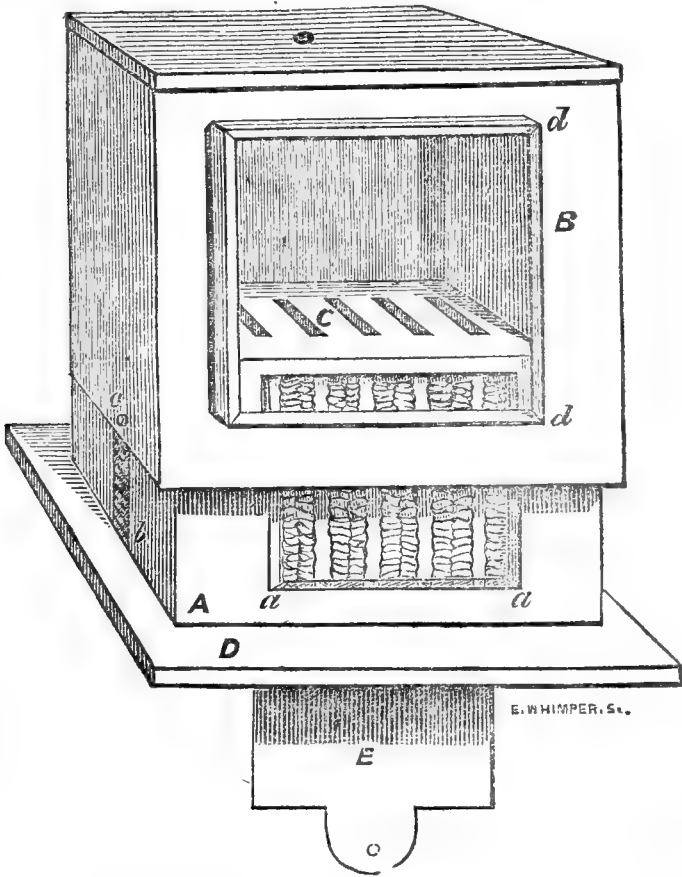
Similar accounts reach me from all quarters, and I very much fear that the winter of 1860-1 will long be remembered by apiarians in this country as having proved most fatal in its effects upon their little favourites.—A DEVONSHIRE BEE-KEEPER.

NEW DEPRIVING-HIVE.

I WAS very much struck with the pleasing diagram of the above in page 247 of THE COTTAGE GARDENER; but on reading the account, I fear it sounds too much like an Irish bull, and that the author has never put his theory into practice.

I should like, therefore, to ask him whether when the hive is raised the bees, in carrying down the combs, attach them to the sides of the outer hive? If so, how is it possible to raise the inner hive from time to time? On the other hand, if they do not so attach them, what becomes of them when severed by the knife from the inner hive. Would they not soon reach the floor-board to the destruction of both bees and combs?—A DEVONSHIRE VICAR.

[The "new depriving-hive," a description of which was copied from the *Irish Farmer's Gazette*, is, undoubtedly, open to the objections so forcibly stated by our correspondent, and, like him, we should be much inclined to fear that the author had never reduced his theory to practice. We may also state that the boxes are altogether too large for the requirements of bees in any part of the United Kingdom; whilst, even supposing for a moment that the arrangement were at all practicable, it would be open to the objection that most of the honey obtained would be of inferior quality, owing to the presence of bee-bread and the impurities which are inseparable from combs which have been used for breeding.



However objectionable may be the arrangements of this hive, we believe the principle to be good, and as it is in this respect identical with one which was figured in page 99 of our twenty-second volume, and which we believe has never received the

attention which it so well merits, we make no apology for reproducing it.

This is the adjuster-hive, invented by Mr. George Fox, of Kingsbridge, Devon, in which the inner hive is the stock-box, whilst the outer one affords protection in winter, and forms at the same time a kind of super which admits of enlargement to almost any extent by being gradually raised, from time to time, as the bees extend their combs downwards towards the top of the stock-box, which they are not allowed to reach.

In the hands of the inventor and his cousin, Mr. S. B. Fox (who first introduced it to our notice in his "Apiarian Notes,") the adjuster-hive has afforded such excellent results, that we deem it well worthy of a more extended trial than it appears to have received. There are, however, one or two little inconveniences yet to be overcome, which make us hesitate to recommend its adoption by any person disposed to timidity in apiarian operations. One of these is the mode of removing the crown-board of the hive through the super, after which the bars and the top-board of the latter must be replaced in defiance, possibly, of a smart attack by the irascible colony. The other is the frequent difficulty of preventing the bees from carrying their combs upwards from the stock-box—a proceeding which must on no account be permitted, but which if once commenced is likely to expose the unfortunate apiarian to the direst vengeance of his unruly little subjects, whilst endeavouring to compel them to construct their combs in accordance with his requirements. These are after all but minor obstacles, which may be encountered without fear by the more experienced apiarian, and to such we recommend the adjuster-hive as being sound in principle, and, therefore, worthy of a fair trial.]

LIGURIAN BEES.

A FRIEND, who is in possession of a stock of Ligurian bees about twenty miles from London, assures me that on Sunday (January 27th) they were actively carrying pollen into the hive. My object in writing is to call attention to this fact, as corroborative of the assertion that this race of bees is more hardy than our native one. I am not aware from what source so early a supply could be furnished, but it seems to point to the fact that breeding had already commenced. I would, moreover, point out the desirableness of experimenting with meal or flour placed within the hive, as a substitute for the scanty supply of natural food for the young at present obtainable abroad.—H. T.

OUR LETTER BOX.

HENS LOSING THEIR THROAT-FEATHERS (—).—Not knowing either the variety you keep nor your mode of keeping them, it is impossible to tell with certainty either the cause or the remedy. Giving them more green food, and rubbing in some sulphur ointment on the featherless places may be the best treatment. It can do no harm.

SILVER-CINNAMON COCHIN-CHINAS (*Delta*).—The plumage of their bodies is of a creamy white colour, and that of the neck, or hackle, a bright cinnamon brown. With a buff-coloured cock hens of that colour will produce most chickens of their own colour, but some will be light buff. Colour in the progeny, however, is very uncertain from such parentage.

RABBITS, &c. (*E. A. M.*).—We shall be very much obliged by your doing as you kindly propose. We fear, unless the musical box is large, that it will not be effective in teaching a bird to sing. We know of no nursery where you can purchase cuttings. Let us know any that you especially require, and at the same time oblige us by stating your direction.

WILD RABBITS IN CONFINED SPACE (*A Devonshire Vicar*).—I should advise "A Devonshire Vicar" to kill off the wild Rabbits he has, and purchase about six does and a buck, either Chinchillas, Silver Greys, or Himalayans. The skins of both kinds are about one value. The carcasses are much larger than of the wild Rabbit, and the skins should pay for their keep.—R. S. S.

COLOUR OF SILVER GREY RABBITS (*G. C. Whitwell*).—The colour of the Silver Grey Rabbit skins, now most in favour with furriers, is the dark. A few years since the light was in fashion, but the very light are termed in the fur trade, "millers," and are barely worth anything, merely the same price as the common wild grey. The Dutch are not quite so large as the Silver Greys, but I think sell quite as well. The Patagonians cost more than many long-eared Rabbits, but are not so plentiful.—R. S. S.

PRICE OF HONEY (*An Apiarian*).—We cannot tell what price the dealers in London are giving for honey in the comb; but we know that Messrs. Neighbour are selling some very superior out of Stewarton supers at 4s. a-pound.

STOCKING A HIVE (*A Constant Reader, Cardross*).—The best mode of stocking a hive is with a swarm in the usual way. To transfer bees successfully from an old straw skep to a depriving-hive, requires much practice and great skill in apiarian matters. At the best it would be a very hazardous operation. Read our reply to "A DEVONSHIRE VICAR" in another column.

WEEKLY CALENDAR.

| Day of Mnth | Day of Week. | FEBRUARY 12—18, 1861. | WEATHER NEAR LONDON IN 1860. | | | | Sun Rises. | Sun Sets. | Moon Rises and Sets | Moon's Age. | Clock before Sun. | Day of Year. |
|-------------|--------------|-----------------------------|------------------------------|------------|-------|-----------------|------------|-----------|---------------------|-------------|-------------------|--------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | |
| | | | | deg. d. g. | | | m. h. | m. h. | m. h. | | m. s. | |
| 12 | Tu | SHROVE TUESDAY. | 30.333—30.178 | 33—22 | N.E. | — | 22 af 7 | 7 af 5 | 28 a. 8 | 3 | 14 31 | 43 |
| 13 | W | LENT BEGINS. ASH WEDNESDAY. | 30.508—30.455 | 34—20 | N.E. | — | 20 7 | 9 5 | 35 9 | 4 | 14 30 | 44 |
| 14 | Th | Persian Iris. | 30.526—30.457 | 37—22 | N.E. | — | 18 7 | 11 5 | 45 10 | 5 | 14 27 | 45 |
| 15 | F | Adonis vernalis. | 30.477—30.225 | 41—33 | N. | ·30 | 16 7 | 13 5 | 54 11 | 6 | 14 24 | 46 |
| 16 | S | Helianthus viridis. | 30.184—30.020 | 42—32 | N.E. | ·01 | 14 7 | 15 5 | morn. | 7 | 14 21 | 47 |
| 17 | SUN | 1 SUNDAY IN LENT. | 30.370—30.225 | 44—34 | N.E. | ·01 | 12 7 | 17 5 | 4 1 | 8 | 14 16 | 48 |
| 18 | M | Neapolitan Violet. | 30.312—30.122 | 45—32 | N. | — | 10 7 | 18 5 | 12 2 | 9 | 14 11 | 49 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 45.5° and 30.8° respectively. The greatest heat, 58°, occurred on the 16th, in 1859; and the lowest cold, —32°, on the 13th, in 1855. During the period 146 days were fine, and on 92 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

ARRANGEMENTS should now be made for cropping the kitchen garden the ensuing season. Allot a certain portion of ground for each particular crop; this will prevent much trouble and confusion throughout the summer. Where there is plenty of ground it is not of so much importance, but where a large produce is required from a small garden it is highly necessary that some arrangement should be made and followed, so as to keep a succession of crops in the ground. In all situations and under all circumstances it is highly useful to keep a cropping-table, and note the time of sowing, planting, and gathering, with remarks on each description of vegetable. This table would be of great value in pointing out the best time of sowing in that particular locality, so as to have the crops come in at the time required. *Asparagus*, give plenty of air to them, and all other crops in frames, and make up fresh beds. *Cauliflowers*, plant out from the seed-pans all the young plants before they become too much crowded, and, if needful, make fresh sowings. *Cucumbers*, make fresh linings, and keep up a steady heat in the beds. Sow seed for succession crops. *Carrots*, sow in frames, and thin those already up; also, sow a crop in the open ground. *Lettuce*, sow a crop of *Cos* in frames, and in the open ground. *Potatoes*, plant for first crop in a sheltered situation, if not already done. *Rhubarb*, sow on a warm border. *Spinach*, sow a small quantity on a sheltered border.

FLOWER GARDEN.

Give the lawn a good rolling after rain, and where the turf is uneven to be stripped off, the ground levelled, and the turf relaid. Slightly edge the walks and roll frequently, to make them firm. Turn walks, and fresh gravel the surface where necessary. At this season of the year when walks become sodden it may be worth while to know that a small faggot burned in the cylinder of a garden-roller will heat it so as to prevent what is technically called "licking." All alterations should now be carried out without delay. Prune the *Roses* from which you wish to get an early bloom; but defer the pruning of the more tender kinds to March. Trench up vacant and renew exhausted beds.

FRUIT GARDEN.

Continue pruning and nailing as directed before. Where nets or bunting cannot be procured for protecting the blossom of *Apricots* and *Peaches*, suspend from the top of the wall to the bottom of the tree a quantity of straw or hay ropes made with a few projecting loose straws. Dry fern or spruce branches may be nailed over the branches of the trees with advantage.

STOVE.

Commence applying more heat in moderation, and make use of the syringe every fine morning, except to the plants that are in bloom. Shake out and repot another succession of *Gloxinias* and *Achimenes*. Cut

back *Poinsettia pulcherrima*, *Eranthemum bicolor*, *E. pulchellum*, *Justicia formosa*, *J. coccinea*, &c. Select some of the best young plants of *Euphorbia*, *Rondeletia*, *Brunfelsia*, *Jatropha*, &c., to be placed in bottom heat.

GREENHOUSE AND CONSERVATORY.

Shift and tie out *Pelargoniums* as may be required, and allow them plenty of space with all the light possible, and a free circulation of air whenever the weather will permit. *Cinerarias* and other plants will require frequent shifting and placing at greater distances from each other that air may circulate freely among them. Do not allow *Calceolarias* to suffer for want of pot room, as a check to their growth is apt to throw them prematurely into bloom.

FORCING-PIT.

Keep the bottom heat up to 80°, and increase the atmospheric heat to 80° for a couple of hours on sunny afternoons, with occasionally slight syringings at such periods. The general temperature to range from 65° to 75°. Continue to introduce *Roses*, bulbs, *Lilacs*, *Sweet Briars*, &c., for succession. *Hyacinths*, *Narcissuses*, *Tulips*, *Crocuses*, and all flowering bulbs of this description, as soon as done flowering, to be turned out of their pots into some light rich soil on a warm border, or any other sheltered situation, to mature their bulbs for beds and border flowers next season.

PITS AND FRAMES.

As the late severe frost and damps will have reduced the number of some kinds of bedding-out plants, strong plants or store-pots of *Verbenas*, *Fuchsias*, *Petunias*, *Heliotropes*, *Salvias*, *Calceolarias*, &c., to be removed to some house, pit, or frame, with a moderate bottom heat, to excite them to furnish an abundance of early cuttings. Make a sowing of *Phlox Drummondii*, and place it in heat. Sow in a mild hotbed some *Ten-week Stocks*, *Asters*, *French Marigolds*, and other half-hardy annuals. Top dress *Auriculas* and *Polyanthuses* with a light loam made rich with rotten cowdung. Take off the offsets before top dressing; plant three or four in a five-inch pot, and place them in a shady part of the frame. Sow seeds of the same in shallow pans, and place them in a cold frame.

W. KEANE.

DOINGS OF THE LAST WEEK.

WITH the exception of a slight frost one morning, we have enjoyed a week (ending February 5th), of fine weather almost resembling that which gentle April generally brings. Some days have also given us a fair amount of sunshine, making plants and their attendants look all the more cheerful. We might even tramp the ground with firmer tread, and allow our feelings to rise to enthusiasm-point, but for the wrecks of *Roses* and every thing deciduous carrying a green leaf at the approach of the frost. Some evergreens too, look as if they had been held over the scorching flame of a furnace. Singular enough, some fine plants of *Sweet Bay* are little touched, whilst commonly-supposed hardier things are injured. The ground being in good order, flower-beds that had been dug were turned over, and beds and borders undug before the frost have been partly dug and laid up

n ridges. A few half-rotten leaves were added. In moving the soil the depth gone to was two fair spits of the spade; but only a little of the lower spit was brought to the surface. This deep stirring we consider a great means of safety, whether the season be wet or dry. In the first place, the extra moisture can easily escape; in the second place, the moisture will easily rise from capillary attraction, if we do not keep it in the ground by surface stirring. To prevent too luxuriant growth, we keep all little manurial matter we can give near the surface.

Filberts have been deprived of all suckers, and pruned to keep them open, leaving enough of rather slender twigs. Wall trees have been injured with soap-suds. Doing so before a frosty night helps to keep clear of vermin. A small piece of last-summer Cabbages that in common seasons produce a great amount of cuttings, were so injured that the sound were moved and the ground marked out for Celery-beds 4 feet wide and 4 feet between. A spit was thrown out from the beds, and a row of Peas sown along the ridge. The kinds being—Sangster's No. 1, Dickson's Early Favourite (a first-class early Pea), Eclipse, and Veitch's Perfection. Dry soil, mixed with soot and lime, was thrown over the Peas. A bed made chiefly with leaves for a three-light box was planted with Early Frame Potatoes, sprung an inch or so previously. Dry soil from a shed, and riddlings from beneath a potting-bench being used for the purpose, placing the Potatoes in four inches of soil and covering with six inches more, and then sowing the surface of the bed, between the rows of Potatoes, with Lettuces, Cabbages, Cauliflowers, and a few Radishes; most of which will be out of the way of the Potatoes before they are fit to gather, or a few left between the rows. Plenty of air was given in the fine days to Radishes, Carrots, Cauliflowers, bedding plants, and plenty of top air especially to Pelargoniums, Camellias, &c., and water communicated as required. Cinerarias are kept airy, moist, and cool, and showed no vestige of insect. The same as respects Calceolarias. Pelargoniums a few degrees warmer. Small plants repotted in turfy sandy loam with a little leaf mould. Scarlet Geraniums of some size, or new kinds have been shaken out of their pots, repotted in smaller, and plunged in a pit, just securing a very gentle heat from tree leaves. Some variegated kinds have been taken from cutting-boxes, and potted singly in small pots, and will get the same advantage as the larger Scarlets for two or three weeks, when they must make way for others.

When so much is to be done in little room, I often think that but for the first expense plenty of conveniences would be the cheapest in the end, as the labour of such moving and trouble would be avoided; but, perhaps, we should just get all the more careless. Every man is all the better for his mind and invention being kept pretty well on the stretch. The good mechanic's wife might never have dreamed of breaking the bones of her butcher's meat and making soup of them, if, when out of the materials for a dinner, her husband had not advised her to boil some stones among certain other ingredients. The washing of flint stones led her to think of trying the bones. Many clever contrivances are equally the result of the necessities of the circumstances. This fine weather after the frost storm will fail to impart one of its chief lessons, if it does not give many of us a twinge of uneasiness for not giving this some, and that more, protection; and, also, for impressing on many the importance of a glass covering, when tender fruit trees on the open walls are so subject to injury. But for the hints and lessons these hard hits give, it would be next to unbearable to look forward to the fine days of summer and think how we shall miss many an old favourite. No one will sympathise with us when the fine weather has come. The breathing of a sigh will at once consign us to the company of the morbid and the grumblers. All inculcate "keep a good look out a-head." Regrets can have no influence on the past.

Bulbs, such as Hyacinths, cover with a paper funnel, with a small hole at the top if the flower-stems are not rising freely. Those in forcing-bed should be set on the surface some days before moving to the window or the conservatory. Violets keep dry on the surface if in beds, and avoid too much water if in pots. Keep Mignonette in bloom free from drip. Fuchsias in small pots growing slowly all the winter, repotted and placed in Vine-pit at an average temperature of 55° at night; potted into small pots cuttings struck late in autumn; rough-pruned those taken from flower-beds and kept in a shed during winter; did the same with those growing in pots last summer, and placed them in the vinery in average of from 50° to 55°,

in order that they may be induced to break a little before repotting; left the bulb in this shed to break more slowly for succession. Will not report these until they have broken from half an inch to an inch; will then, most likely, place them in reduced-sized pots at first. Turned up Gloxinias from lying in their pots on their broad sides that they might imbibe a little moisture; ditto with Achimenes, as I do not want either very early. Sowed a few more Cucumbers and also Melons, in an average temperature at night of from 60° to 65°. Sowed also a little dwarf Celery seed in a mild heat, of a stubby white sort. It is smaller than the old flat-stemmed Siberian, exceedingly sweet, crisp, and hardy. I am not sure what exact name it goes by; but I find a plant 15 inches high will have more fit for table than giant kinds of three times the size. The Vines in a pit some 6½ feet wide have had the shoots twisted to make them break regularly, as there seemed to be a tendency of the strength of the plants finding an outlet at the extremities. A small vinery with buds slightly beginning to move, filled to overflowing with potted Geraniums, &c., temperature from 50° to 55°. Peach-house with blossoms beginning to open, average at night from 50° to 55°, with from 10° to 20° rise from sunshine. Black Prince Strawberries setting and the flowers dusted in fine days. The same will be done with Peaches, using a fine feather or a camel-hair brush for the purpose. Thinned flower-beds when very thick. Dahlias that were scarce have been put into a slight heat. The main stock will remain in their shed some time longer, as few things are more injured from being knocked about than Dahlias, if kept in pots very long, or browned, or stunted, before planting. Fine healthy plants, if small, will beat them. For the main supply, the floor of a vinery, shut up in the middle of February or March, is as good a place as any; and where numbers are not wanted, dividing the roots so as to have a healthy shoot to each piece, is one of the best plans for securing fine growth and abundant bloom at little trouble. No chance has been lost in putting in cuttings of bedding plants as they could be obtained. Verbenas in pots have a frequent skiff from the syringe to keep them clean. Azaleas and other hard-wooded plants must not suffer from dryness now.

Various reasons besides the frost storm prevented us getting up many tree leaves—our great stay for fermenting-heaps; but these fine, dry days will enable us to get them together in good condition, and when dry they do not cost half so much for carting as when wet, and then they do so much better and longer service. I make it a point at this season to give our little woods a *wide berth*. They have not only their own thick layer of leaves, but that is increased by what blows from the open park, and where at best they are comparatively thin. But then the quiet scratching of a rake might scare a rabbit, a hare, or even a pheasant! I have no love for the philosophy of the fox, which stigmatised the good things he could not get. I would avoid the cankering feelings of envious covetousness by simply turning my head the other way. Many a gardener frets out the happiness of his existence, because his employer cannot be induced to look upon a heap of tree leaves, and many a heap besides, with interest as he does. No servant can do the best he can, if interfered with by other servants. I can just believe it possible, that a gamekeeper may feel his nervous system as much deranged by a gardener starting a rabbit in one of his preserves, as the gardener would be annoyed when pheasants and hares left bare tracks behind them in his kitchen garden.—R. F.

PACKING APPLES IN LEAVES.—A few years ago Mr. J. W. Coynton, of East Hartford, while gathering up the leaves under an Apple tree in the spring observed beneath them a fresh, unfrozen Apple. It suggested at once that dry leaves would answer well as packing material for fruit, and the next fall and every season since he has used them for this purpose. We saw a few days ago some specimens thus preserved, seemingly as fresh and piquant in flavour as when first gathered. Yet he assured us they were varieties that would have decayed months ago unprotected. His plan is to pick the Apples carefully at the proper time, but not to pack them until the forest leaves are perfectly dry, and the weather quite cool. Then the Apples and leaves are packed in alternate layers, and the last layer of leaves crowded in as close as possible by placing any convenient weight on the cover of the barrel. The leaves are of such elasticity that the whole may be compressed so tightly as to prevent the shucking, &c., and yet not bruise the Apples in the slightest degree.

In this latitude Mr. Boynton has never found it necessary to keep these barrels of fruit in any place warmer than an open shed. It would be advisable, of course, everywhere to keep them in as cool a place as possible. In the spring they are to be removed to a cool, airy cellar, to an apartment especially for fruit, in connection with the ice-house.—(*American Homestead.*)

ROSES.

It is too soon yet to write about Roses in reference to the hard frost of this winter. The 1st of April will be quite early enough for all practical purposes to fix on the extent and the damage that Roses sustained by the frost, to register the kinds which are seemingly the most tender, and to ascertain how far Bourbons, Teas, and Noisettes, have been hardened for the last twenty years by the accession of new seedlings. The January of 1841 being the last great destroyer before the winter of 1860-1. But the season, or summer, before 1841 was the very reverse of last summer as respects the growth and the ripening of the young wood of tender Roses and all other such plants, so that Tea and other Roses which stood out the frost of 1840-1, must have been more severely punished by the late frost, as their young wood was neither nearly as well ripened as it was in 1841, nor the shoots so devoid of sap, which is almost, if not altogether, equivalent to unripe wood or half-ripened wood.

The wood of all trees and bushes in this climate was never in our experience so well matured, and, to all appearance, so well able to resist a hard winter as it was at the beginning of October, 1859. Yet, before the end of the month the young wood of many Peach trees received such a frost shock as is not within our memory to record, and from which they never recovered; while other Peach trees in colder situations escaped that early frost and the frosts of the following winter. If the frost of the 17th October, 1859, had come on the 17th of August of that year, it would not have so much injured Roses and Peach trees at least—and that is a curious thing when you come to give it a thought, with a view of comparing the one season with the other.

At the beginning and at the end of last October on the other hand, Tea or tender Roses and Peach trees were never in a worse condition to resist a severe or sudden frost. The wood was full of sap and not half ripe. Twelve months before then the wood was more ripe than such wood ever was in our days; but it was full of unripe sap, or watery sap, nevertheless, from the heavy rains of the previous September. So that, in practice, all our means of ripening the young growth of tender plants goes for nothing—absolutely nothing, if we have not the means of keeping out of their system or circulation any sudden or heavy fall of rain which may happen after the autumnal or equinoctial gales. The lesson which has been taught us by the two last autumns in their extremes points to that conclusion, and to none other.

You may grow a suckling in an orchard-house from March to September, so that the suckling is as ripe as a new-laid egg, and the season's wood as hard as a hoof or horn; but if you allow the healthy and greedy suck of the roots to exercise itself afresh, in September or even in October, by turning out the plants under heavy rains at the tail of the autumn, and after that you are compelled to leave them to the chances of the weather for that winter, depend upon it that all your in-door work, all this ripening of the young succulent wood, or such ripening as forced itself on all our stock in the summer of 1859, goes for nothing if we cannot keep the plants under cover for the winter, or else be able to keep the wet from getting so freely into their system after they are once ripe.

That is not a sudden thought thrust on one after the fact. I saw it last October, as certainly as I shall hear of

it now, and I took measures to counteract the influence of a hard winter, although I did not expect even frost over 5° till after the middle of January, and not a very hard one then. Still, remembering October, 1859, and not knowing but the like might be on me earlier than ever, I saved my young Roses, all young from one and two-year-old cuttings, and of all sorts and kinds on to the number of about four hundred plants, from the influence of the then heavy rains and the pouring torrents of the last six months, and came out of the experiment, I believe, without the loss of a single plant, and scores of mine are not so strong-looking as my pen-holder. Some few among the very weak Tea Roses seem scathed as by fire, but the bark and the buds are safe and sound.

The means I adopted to save my Roses, I also put in practice with other sorts which are much nearer my heart than even Roses, and with just the same result—very little damage from frost. The means were a complete stopping of the sucking powers of the roots. After I did it, not one of the numerous, healthy, and very fibrous roots could suck another drop from the earth for that autumn, and the leaves were green as ever, sucking in their turn from the vessels of the stems and shoots, putting me in mind of what Sir Wm. Middleton used to tell me at times, "If you make me bleed at every pore I shall soon run dry." Now the workings of the leaves in that dull, mild, and rainy October, caused the pores to bleed as freely as if they were fed from below; and the consequence was, they, the pores, soon ran dry, and the young wood in effect was in the same condition as you might expect it to be from a hot summer, or, if you can apprehend it, like a man dying of hunger in the midst of plenty. That means, most certainly, had saved many kinds of my Roses from destruction, and all of them from more or less damage; and, as a matter of course, the same means would have saved every Rose of the same kind which the frost of last winter had killed above the zero of our scales; for with me the frost was barely down to zero, and that only on two nights, but at the time the earth was bare as my loof or the palm of my hand, which in other parts were deep in snow—the safest covering of Nature against severe cold.

In the second week in October I took up every one of my Roses and other plants from cuttings during the two previous years. I docked in the roots considerably; but, contrary to what I often preached in respect to Roses, I did not cut off a shoot or leaf from any one kind, and very few of the leaves flagged at all, and many on the Hybrid Perpetuals are quite green now, none of the tops being yet pruned. That was an exceptional season, and this is exceptional in my practice to meet it as far as possible. With me, and with my mode of having all Roses on their own roots, there must be some numbers of very small plants just rooted among them every autumn. My practice and my preaching go to prove and to advise the use and necessity of pruning all young and weak Roses, no matter to what section they belong, just at the end of September or early in October; and the natural reason for such early cuttings is in order that the sucking of the roots for the rest of the autumn should not be spread up among extended branches, or the sucking be very strong on account of a good outlet to let it run its upward tendency—but be slow and sure on a much smaller scale, and be confined to a few buds near to the surface of the ground.

The slower the suction of the roots is in the latter part of the autumn, the more sure the sap is, or the more near to ripe it is in its nature, and, therefore, the more manhood strength, so to speak, it gives to the buds which will be run up into the next season's growth, and then the stronger the shoots will be in consequence, and the sooner a young plant gets up to its prime. The same rule of nature applies to the young Oak as

well as to the young of Roses, and, in a more practical sense, it also applies to the old and to the infirm of all trees and bushes whatever. The more old they are, and the more stunted they look, the more they stand in need of man's assistance by pruning them in the autumn before the natural time of their casting their leaves, to enable Nature to accumulate the stores of sap destined for the next growth in a fewer number of buds, so as to render these buds more strong than they could become if the sap of the latter part of the season was expended among the whole number, and after being so expended to be afterwards cut off by the spring pruning.

There are few things in gardening in which the practised eye is more necessary than in determining from appearances which Roses or other plants ought, or ought not, to be pruned in the autumn. When a Rose is in full vigour, to add more to its strength by this autumn pruning is not good practice, as the new race of Perpetua Roses is more free of growth than old kinds; the least addition to their strength is more likely than not to render them less productive of flowers, and more abundantly to put forth long shoots which are inimical to free flowering. And autumn pruning is more against strong Roses on their own roots than against such when they are budded on any kind of stock; but I have a case in hand where that rule should not apply.

I planted a few Roses of the strongest Hybrid Perpetuals for a friend five years back to make pillar Roses of them, and I recommended the kinds to be on their own roots, as giving him less trouble in after years; for although his soil is just the right sort for Roses, being sufficiently strong for Broad Beans and dry at the bottom, if his pillar Roses were worked on stocks very low the suckers from the stocks would bother him; whereas every sucker from a Rose on its own roots would be a help to him to keep the bottom of his Rose pillar well clothed, and up to the best shape for such pillars—that is, full and wide at the bottom and taper upwards. Well, the Roses when they came to him were miserably small, and to his eyes would not be pillar Roses till we were dead and gone. Well, we must make the best of a new move, said I, the world runs after worked Roses, and the nurseries must follow suit; but I run away from worked Roses on principle, and if you will allow these kinds to be pruned very close at the end of September for the first four years, I shall do it for you, and warrant they will be higher by that time than you want them to be, and when they are up to your liking you will please to recollect to prune them yourself, not very close, at the end of February, or if they seem to be getting higher than you wish them, you ought to delay the pruning to the middle of April, and then cut off very little indeed, rather thin them well than cut them close, and that is how they must be done this very spring. But I must tell of the battle I had to sustain the second year, in 1846. I just forget how they stood at the end of the first season's growth, but I had them cut very early in October, and down to quite close to the ground—much against his grain; but I argued thus: What signifies the difference between us? You want something to look at, and if I leave them as long as that you shall have it, and lose one season on the height of the pillar in six years, and you shall have no more flowers than I should get from the closer cut, nor such large ones. If I do not cut lower than you say, the shoots will not be over a yard long next season; but if I cut these shoots now to the ground you will see some five-foot lengths next season. And so there were, but then my troubles began: he would as soon cut my acquaintance, and my assistance, as have one of these long shoots shortened, for now he had something to look at. A man like me who has been under authority, will never do a thing that he is once told not to do—at least, he should never do so. When I saw the necessity of doing a thing, and had my doubts about

getting leave to do it—say the cutting down of a fine tree which interfered with something, down with it I would, at my own time, and on my own responsibility, and if aught was said against me for so doing, I would say I was sorry, and that if I had known all, that the thing should not have been done on any account. It is not always that all gardeners can go so far as that, or presume so much; but no one under authority should ever do one mortal thing that he is once told must not be done, nor fret for being refused. This, the ruling passion, is just as strong with me now as when I was in the ranks, and I could no more cut down those Rose shoots than I could fly, after he said he would not have them cut on any account. But another old way of bending the English Oak makes an impression on all minds which think for themselves, and this was one of them. I said the thing should be done, it stood to nature, and to the teaching of practice; but I quite agree with you that no owner of a thing should ever let the reins out of his own hands at the bidding of another, contrary to his wish. If you wish so and such in your own garden, and pay for it, you ought to be the sole authority, and by the same rule you will relieve me from my responsibility in the matter; and then by turning the subject of the conversation you leave that seed to chance, and the chances are that the next time you meet him, the said owner, the first thing he will do will be to tell you that he had been thinking of what you said about the thing, and, perhaps, the best thing after all would be to do it as you said. If this rule fails depend upon it there is something wrong somewhere, and arguing is out of the question among friends; but gardeners should not argue such matters at all with their employers—merely to state the case or the impression and leave the rest, like putting good seed into good garden ground to take the proper time to bring forth fruit.

The owner of the new pillar Roses was at my door, as I expected, before the end of that week; the Roses were pruned down to the very ground all but one shoot—the strongest and longest on each. This was the end of the second season. The third time of pruning two-thirds of the length of three of the strongest shoots on each plant were left standing, and the rest of the shoots were cut to different lengths according to their strength; and the one-year-old shoot, or the one that was left long at the end of the second season, was cut off clean from the bottom. Thus the first permanent shoots which were left, too, for the pillars were the growth of the third season after planting, and after the centre shoot of the second season had sent up shoots to the height of 7 feet, which were then cut down to the very bottom. There are not finer pillar Roses than these in the county—at least, not finer of their age, yet all that are in their favour are the soil and the plants being on their own roots. The close pruning for the first three seasons is the grand secret for having pillar Roses in perfection almost anywhere.

The new races of the Rose are not one quarter so given to strong rich land as the old summer Roses were, and when they are on their own roots very few of them fail to do well enough in any garden soil if they get their share of the strong water even, without any rotten dung. My garden never gets one ounce of dung the year round; but Roses in general get too rank for me and for their own fame in three or four years. Some of my Rose cuttings got among loose cocoa-nut refuse the year before last, and in June suckers from all the eyes of the unrooted cuttings were up on the surface, and tufts of roots were at the bottom of each sucker.

With a very mild hotbed, and the means of keeping up the heat from February to the middle of May, I am much deceived if the prunings of this season of February of a whole rosery might not be turned into Roses by the million and for the million, and without ever going to the trouble of making a cutting at all. All that is wanted is a uniform

temperature of about 75° of bottom heat, and the substance of the bed, with the air enclosed, to be neither wet nor dry—not down too low one week and up in heat as far above the mark the next. When the right pitch of from 55° to 60° in the air of the bed was got and could be maintained with from 70° to 75° in the bed, six inches below the surface, it would be ready to receive the finest shoots of all your best Roses, just pruned and tied in loose bundles of ten, or a dozen, or less shoots, at one end—the bottom end, in a small ball of moss not wet or dry, and the tops of them to be spread out a little, then to lay down each parcel lengthwise, with the top ends pointing to the back of the frame, and when one row was thus placed, to fill in between the shoots with sifted leaf mould, shaking it in so as to leave no cavities for air or steam to hurt the shoots; to fill up the rest of the rows of bundles in the same way, and then to fill up the whole of the frame from back to front, and from end to end, an inch deep or a little deeper with the same sifted leaf mould, and to consider the work then finished, and the Rose-frame to be afterwards attended to as much as the Cucumber-frame, as to covering, lining, and giving air. But such a bed as is here contemplated would not require watering, or but very little of it, for the first two months. What I would use for the surface of such a bed, and for placing the Rose shoots amongst and over them, would be this cocoa-nut refuse, and I should say that a layer of fresh moss under them and over them would be nearly as good; but the leaf mould, as far as the facility of making roots in it goes, is the next best thing to the cocoa stuff, though neither leaf mould nor moss has nearly the same capacity for holding moisture for a long time; and the success of this method of making Roses, or Rose plants, depends a great deal on the uniformity of a certain degree of moisture for the first six weeks, or about the period the roots from the bottoms of the new growths would take to form and be able to consume more moisture, and when slight watering would become necessary.

Although this is different from any of our present modes of propagation, there is nothing in it with which old gardeners are not quite familiar in one way or other. I have seen Laurel shoots which were dug into the borders of shrubberies shoot up and make roots from the young starts; also, many other kinds. I have dug up in February the prunings of bedding Geraniums dug in in the autumn previously and some of them alive and shooting in the same way; and if I dig in the prunings of Vines in my present garden, they become troublesome the following summer, shooting up from buds all over their surface. Well, it is merely to concentrate this style of haphazard growth, as it were, and to apply it to the propagation of Roses, as the cheapest of all modes that the new system aims at. Let gardeners discover the surest ways of managing the thing under their different circumstances, for the thing is as sure to succeed in their hands in various ways, and we, of THE COTTAGE GARDENER, will always be ready to suggest such other means as may accelerate the process.

D. BEATON.

ADMITTING AIR INTO THE ASH-PIT OF THE KIDDEAN HEATING SYSTEM.

WILL Mr. Beaton inform your readers why he recommends an opening at the farthest end of the ash-pit into the air-chamber in the Kiddean system of heating? Will it not admit dust as well as air into the hot chamber, and thence into the greenhouse? May not this system be adopted in conjunction with an existing flue?—B.

[The air let into the bottom of the air-chamber through a slight opening at the farthest end of the ash-pit is one of Mr. Kidd's recommendations, and his reasons for it are given in my first article on the system. The same objection occurred to myself. I thought the dust would be a bar to ash-pit ventila-

tion, but Mr. Kidd does not find it so. Cases will occur when a very slow mouldering fire will be needed for days and weeks together, and unless the air-registers for admitting draught are always on the most exact model, and attended to with clockwork precision, the draught will be generally too much for the needful combustion; but divide the draught into two equal portions, or currents, the one up through the fire-bars, the other away from the fire into the chamber at once, carrying with it a great and unnecessary heat retained or lost in the ash-pit, or causing too much heat there for the slow burning of the fire over it; and this dividing seems to be just the proper medium, or the easiest gauge to regulate fires for greenhouse work. At all events, the thing suggested itself to one of those practical minds on whose experience I place far greater strength than I would on the technical formulæ of theoretical science. No science will ever exceed the results of the proof of the pudding, no matter how humble it may be, or how plainly cooked. Whether the Kiddean system is applicable to "existing flues" or not wants the proof of the pudding yet.—D. B.]

SELF-REGULATING VENTILATOR.

Is there any self-regulating apparatus to control the temperature of a greenhouse at night, or in the absence of the gardener or amateur? Loudon mentions one invented by a Mr. Kewley, which seems to have had less patronage than it merited. This was a balance acted on by the expansion of alcohol driving the mercury to the other side. There is an apparatus by Dr. Ure, called a thermostat, which acts by the bending of a compound metallic bar of metals which expand unequally. I have seen it proposed in some old book to connect the air-valve with a bladder half full of air (an Indian rubber ball might be substituted). As the air warms it expands laterally, and, therefore, shortens the bladder, and pulls open the valve. If a manufactured article on any such principle could be sold at a moderate price, it would be a great aid to an amateur; who, when he leaves his house at night, is at the mercy of wind or calm, cloud or sky, till next morning.—OMEGA.

[We think for small houses such contrivance would answer, but we have no great faith in anything but care and forethought. Supposing that trusted in, and once going wrong, you might have your house open when the temperature was very low, a close and a bright sun scorching everything up. A house can take no great harm at night, if a little thought is exercised; and if high enough in the morning, a little air given at the top before the amateur leaves home will make all sure for the day. If air is given early, though only a little, the house cannot easily be injured.]

THE LITTLE MARKET-GARDENER;

OR,

HOW TO CULTIVATE AN ACRE OF LAND WHEN PROFIT IS THE CHIEF AIM, AND SHOWING HOW A FAMILY MAY BE SUPPORTED AND SOMETHING PUT BY FOR A RAINY DAY.

(Continued from page 254.)

REQUISITES.

THE first thing to look out for is a comfortable house, of a size according to your family, pretty near to a market town, and if there is a nice little garden attached so much the better; but be sure there is a good pigsty. Never mind about a run out for the pig, he will do very well in the sty.

Most people would like to have their acre of land in an allotment, but I do not care about this. I have mine in six different places, and, therefore, have various sorts of soil, and also a better chance of growing a few seeds, as I can grow early Turnip seed in one place, Cabbage in another, and Cauliflower in a third, which I could not do in an allotment, for there those Cabbage-worts would contaminate each other; but about this you must do as well as you can. It is very seldom that people can do entirely as they wish.

OPERATIONS.

Now, having taken a house and land, it matters not how soon you begin to work; and as I shall expect you to begin soon after Christmas, one of the first things that will want seeing to is

RHUBARB.

For the two rods of early I do not know any better sort than the Royal Albert, and for the one rod of late the Victoria. You need not look out for one of the earliest places in the garden to plant the early Rhubarb in, as these places will pay better for other things, and the Rhubarb will grow almost anywhere. A shady place, so that there are no large roots of trees in the soil, will do better for either early or late Rhubarb than a place full in the sunshine. I very seldom miss selling my first gathering at 4d. per pound. In looking over my books I find that I began to gather Rhubarb in 1859, on February the 26th, and in 1860, on March 28th. Looking farther back I find that I generally began to gather in March.

When you have fixed upon the place to plant them, have about four tons of good rotten manure. Dig it deep and well into about three rods of land; mark this space out into three-foot-wide beds; then cut your Rhubarb into very small sets, and plant one row on each bed 3 feet from each other in the row for the early, and 4 feet apart for the large late. Do not cover their crowns more than one or two inches. Rake over the beds, and make them look tidy, and do not trouble yourself any more about them until you begin to gather for market.

RASPBERRIES.

The next thing to look to will be the Raspberries. For these fix upon a place where you will want a walk across the middle. Mark it out three yards wide, then take one ton of good manure, and spread it upon the two outside yards; dig it in deep and well, leaving one yard in the middle for the walk. The walk is to be dug deep and well, only not to put the manure upon it. Forty-two yards in length will be about two rods. Then get the earliest and best sort of Raspberry canes you can hear of, and plant them three canes to a stool half a yard from each, outside of the bed, and 4 feet from stool to stool. You will then find that you have thirty-one stools in each row; and, remember, that you cannot plant them too shallow. Tread the soil well over the roots, so that the wind will not blow them down, and never mind stakes. Remember, the chief aim is profit: therefore, do not cut them off close to the ground, that they may make better canes for next year. I will tell you in proper time how to have a good crop this year and next, if you get the right sort of Raspberries. I am sorry that I cannot tell the name of my Raspberries, as I do not think there is a better sort in England. I planted them seven years ago this February, and I made 6d. per stool of them the first year, and I have made very nearly 1s. per stool per year of them ever since. I always sell the first week's gathering at 8d. per quart. In looking over my books I find that I began to sell in 1859, on June 27th, and in 1860, on July the 14th. Looking farther back I find that I generally began selling about the latter end of June.

GOOSEBERRIES AND CURRANTS.

If your garden is fenced in with a hedge, the first thing to set about is to make a walk all round the outside close to the hedge. Then, mark out a space one yard wide next the walk. Two feet six inches will be quite wide enough for the walk. You will want these walks in all about 320 yards in length: therefore, if your outside borders are not that length, you must make more across the middle the same as for the Raspberries. These borders will contain five rods, which will be a sufficient quantity for the Gooseberries, Currants, and Strawberries. Then put on four tons of good rotten manure, dig it in deep and well, and plant your Gooseberry and Currant bushes 8 feet from bush to bush in the centre of the borders. Let the Gooseberries be about one-half of them good early sorts that will come first into market, and the other half good Rough Reds. The Currants about two-thirds Black and the other third Reds. If you have to plant any of them across the middle of the ground let it be the Currants, particularly the Red ones, as the birds will not be so likely to take them from the middle as from the outside; and let your soil be whatever sort it may, be sure not to plant them too deep, and remember that they are to be planted the full length of the borders, and you may sow the spaces between with Onions and Lettuces, to draw for salads.

In July next will be the time to get some plants of the Black Prince Strawberry, and plant a row from bush to bush all round your plot.

You will find that these borders will take 118 bushes to plant hem, and if they only make 1½d. per year each, that will come

to 14s. 9d., which is 2s. 9d. more than I have set down in the table. I do not reckon my bushes to make less than 3d. per bush one year with the other.—THOS. JONES.
(To be continued.)

FORCING.

(Continued from page 273.)

HEATING BY TANKS OF HEATED WATER.

THIS was more in vogue a few years ago than it is now. It was erroneously supposed to give out a moister heat than pipes, even when made airtight as well as watertight. When securely covered by iron, stone, or slate, the heat was just as dry as from any other mode of heating. As the heat, if the tank was of any great depth and size, could hardly be so warm as in pipes, openings in the tank so as to allow a moist vapour to escape were found to be very advantageous in cases where a high moist temperature was required—as in growing early Cucumbers, tropical plants in general, and the propagating of softwooded tender plants; as thus all other means of securing a moist

TANK.



SECTION OF DITTO.



A Flow-pipe from boiler. | B Return ditto to boiler.

atmosphere by evaporating-pans were rendered unnecessary, and when a dry air instead of a moist one was wanted, the openings could then be shut. The principle of heating by them is just as simple as heating by hot-water pipes. Whatever the width of the tank, it should be divided in the middle except at the extreme end, so that the water may flow right round. The figure will show a tank of wood 20 feet long and 3 feet wide, A being the flow-pipe from the boiler and B the return-pipe. A boiler will heat such a tank by being almost on its level, but the more feet the boiler is below the tank the quicker the circulation. Tanks are chiefly useful for one house, and, however long it be, it must be quite level. Even in a range of houses, and where a tank might be continued along them all, it is found that the circulation is impeded at every junction or sluice. A great depth is totally unnecessary; from four to five inches will be found deep enough for anything. They may be made of iron, of earthenware, of brick and Roman cement, or even of slate, made secure at the junctions, or of one-and-a-half or two-inch-thick red deal, covered with stout slate or other conducting substance. The last mode is perhaps the best of all for the amateur, as with wood tressles he may place his tank at once on the desired level. The wood, it is true, will give out little heat, but it will confine it and send it to the conducting top covering, and this may be so managed as to give both bottom and top heat. A tank 3 or 4 feet wide, covered with slate from a half to three-quarters of an inch thick or more, will heat a large house. When a little tank is used as an auxiliary for propagating in a small house, 18 or 24 inches will be wide enough, and might be heated by a small boiler set over the furnace, or by a band of pipes placed over the fire as in fig. 14. For such latter purpose common house slates would do for covering, and very close covering need not be cared about. For regular general heating the slate covering, or whatever it is, should be fixed securely with a mixture of red and white lead or other cement. Some, to secure a great amount of moist heat when desirable, take flow and return-pipes along the tank to heat the water. I have no objection, unless on the score of expense. On the whole, though tank-heating either for bottom or general heating is good enough, where each tank communicates directly with the boiler, yet in hardly any case can we see their superiority, either as respects economy or utility over cast-metal pipes, from which dry or moist heat can be obtained at pleasure.

R. FISH.

(To be continued.)

THE SCIENCE OF GARDENING.

(Continued from page 275.)

THE canker, as already observed, attends especially the old age of some fruit trees, and of these the Apple is most remarkably a sufferer. "I do not mean," says Mr. Knight, "to assert that there ever was a time when an Apple tree did not canker on unfavourable soils, or that highly cultivated varieties were not more subject to the disease than others where the soil did not suit them. But I assert, from my own experience and observation within the last twenty years, that this disease becomes progressively more fatal to each variety, as the age of that variety, beyond a certain period, increases; that if an old worn-out orchard be replanted with fruit trees, the varieties of the Apple which I have found in the catalogues of the middle of the seventeenth century, are unproductive of fruit, and in a state of debility and decay."*

Trees injudiciously pruned, or growing upon an ungenial soil, are more frequently attacked than those advancing under contrary circumstances. The oldest trees are always the first attacked of those similarly cultivated. The Golden Pippin, one of the oldest existing varieties of the Apple, is more frequently and more seriously attacked than any other.

The soil has a very considerable influence in inducing the disease. If the subsoil be a ferruginous gravel, or a wet clay, or if it is not well drained, the canker, under any one of these circumstances, is almost certain to make appearance amongst the trees, however young and vigorous they were when first planted.

Pruning has a powerful influence in preventing the occurrence of the canker. We remember a standard Russet Apple tree, of not more than twenty years' growth, with a redundancy of ill-arranged branches, that was excessively attacked by this disease. We had two of its three main branches and the laterals of that remaining carefully thinned; all the infected parts being at the same time removed. The result was a total cure. The branches were annually regulated, and for six years the disease never re-appeared. At the end of that time the tree had to be removed, as the ground it stood upon was required for another purpose. John Williams, Esq., of Pitmaston, from long experience, concludes that the Golden Pippin and other Apples may be preserved from this disease, by pruning away every year that part of each shoot which is not perfectly ripened. By pursuing this method for six years, he brought a dwarf Golden Pippin tree to be as vigorous and as free from canker as any new variety.†

All these facts unite in assuring us that the canker arises from the tree's weakness, from a deficiency in its vital energy, and consequent inability to imbibe and elaborate the nourishment necessary to sustain its frame in vigour, and much less to supply the healthy development of new parts. It matters not whether its energy be broken down by an unnatural rapidity of growth, by a disproportioned excess of branches over the mass of roots, by old age, or by the disorganisation of the roots in an ungenial soil; they render the tree incapable of extracting sufficient nourishment from the soil, consequently incapable of developing a sufficient foliage,‡ and, therefore, unable to digest and elaborate even the scanty sap that is supplied to them.

The reason of the sap becoming unnaturally saline appears to be, that in proportion as the vigour of any vegetable declines, it loses the power of selecting by its roots the nourishment congenial to its nature. M. Saussure found in his experiments, that the roots of plants, growing in saline solutions, absorbed the most of those salts that were injurious to them, evidently because the declining plant lost the sensitiveness and energy necessary to select and to reject.

M. Saussure also found, that, if the extremities of the roots were removed, the plants absorbed all solutions indiscriminately.§

An ungenial soil would have a debilitating influence upon the roots in a proportionate, though less violent, degree than the sulphate of copper; and as these consequently would absorb soluble bodies more freely, and without that discrimination so absolutely necessary for a healthy vegetation, so the other most essential organs of nutrition—the leaves of the weakened plant, would promote and accelerate the disease. These, reduced in

number and size, do not properly elaborate the sap; and we have always found that, under such circumstances, these stunted organs exhale the aqueous particles of the sap very abundantly, whilst their power of absorption is greatly reduced. The sap, thus deficient in quantity and increased in acidity, seems to corrode and affect the vascular system of the tree in the manner already described.

These facts afford us most important guides in attaining the desired objects—the prevention and cure of the disease.

If superluxuriance threaten its introduction, the best remedy is for the cultivator to remove one of the main roots of the tree, and to be particularly careful not to add any fertile addition to the soil within their range. On the contrary, it will be well, if the continued exuberant growth shows its necessity, for the staple of the soil to be reduced in fertility by the admixture of one less fertile, or even of drift sand.

If there be an excess of branches, the saw and the pruning knife must be gradually applied. It can be only trees of very weak vital powers, such as is the Golden Pippin, that will bear the general cutting of the annual shoots, as pursued by Mr. Williams. A new vigorous variety would exhaust itself the following year in the production of fresh wood. Nothing beyond a general rule for the pruning can be laid down; and it amounts to no more than the direction to keep a considerable vacancy between every branch both above and beneath it, and especially to provide that not even two twigs shall chafe against each other. The greater the intensity of light, and the freer the circulation of air amongst the foliage of a tree, the better the chance for its healthy vegetation.

If the disease be in a fruit tree, it is probably a premature senility induced by injudicious management, for very few of our varieties are of an age that insure to it decrepitude. We have never yet known a tree, unless it was in the last stage of decay, that could not be recovered by giving it more air and light, by careful heading-in, pruning, improvement of the soil, and cleansing the bark.

If the soil by its ungenial character induces the disease, the obvious and only remedy is its amelioration, and if the subsoil be the cause of the mischief, the roots must be prevented striking into it. In all cases, it is the best practice to remove the tap root. Many orchardists pave beneath each tree with tiles and broken bricks. If the trees are planted shallowly, as they ought to be, and the surface of the soil kept duly fertile, there is not much danger of the roots striking into the worse pasturage of the subsoil.

Having noticed the gangrene as it appears in various forms upon our trees, we may now turn to a few of the many instances where it occurs to our fruits and flowers, for it is not too much to say that scarcely a cultivated plant is within our enclosures that is not liable to its inroads. It assumes different aspects, and varies as to the organs it assails, yet still in some mode and in some of their parts all occasionally suffer, for it is the most common form of vegetable disease.

The canker in the *Auricula* is of this nature, being a rapidly spreading ulcer, which, destroying the whole texture of the plant where it occurs, prevents the rise of the sap. Some gardeners believe it to be infectious, and, therefore, destroy the specimen in which it occurs, unless it be very valuable; but this we believe to be an erroneous opinion—the reason of its appearing to be infectious or epidemic, being that it occurs to many when they are subjected to the same injurious treatment which gives birth to the disease.

It appears to be caused by the application of too much water, especially if combined with superabundant nourishment: therefore, although cutting out the decaying part when it first appears, and applying to the wound some finely powdered charcoal, will effect a cure if the disease has not penetrated too deeply, yet it will be liable to return immediately if a less forcing mode of culture be not adopted. No *Auricula* will suffer from this disease if it be shifted annually and the tap root at the time of moving be shortened, a thorough system of draining being adopted, such as having the pot used one-fourth filled with pebbles, and excessive damp during the winter being prevented by proper shelter.

Parsley grown in a poor soil is also liable to *canker* in the winter. Mr. Barnes says he never found any application which eradicated this disease so effectually as a mixture in equal parts of soot and slaked lime sown over the plants. The cure is complete in a few days, and the vigour of the plants restored, indicating that this species of ulceration, like that which is

* Some doubts as to the efficacy of Mr. Forsyth's Plaster, by T. A. Knight, Esq., P.L.H.S., &c., 1802.

† Trans. London Horticultural Society, vi. Art. 64.

‡ No symptoms of a cankered tree are more invariable than a deficiency of leaves.

§ Saussure's *Recherches Chimiques sur la Vegetation*, 260.

found in the dwellings of the poor, arises from deficient nourishment.

The spot, as it is technically termed, occurring on the leaves of the *Pelargonium*, is a dry gangrene, occasioned by an irregularity in the supply of moisture and vicissitudes of temperature, but especially if one of the extremes is much below the degree of heat most favourable to the healthy growth of that plant. The reason of this is very obvious. If a *Pelargonium*, or any other plant, be placed in a highly stimulating heat, and is abundantly supplied with root moisture, it immediately increases its surface of leaf to elaborate and digest the large amount of sap forwarded from the roots. If this amount of sap is subsequently reduced, by lowering the temperature and adding water to the soil less freely, the increased surface of the leaf is no longer required, and it is a law pervading all the vegetable creation, that the moment any of the parts of a plant are unnecessary to it, that moment those parts begin to decay. We placed a plant of the Marvel of Peru, or *Heliotrope*, in a high temperature, and supplied it abundantly with water until its leaves were much increased in size; the temperature and moisture were then much reduced, and the leaves in a few days were completely decayed round their edges, and in spots upon their surfaces. The extent of leaf was accommodated to the amount of sap to be elaborated.

The *spot* and *shanking* of Grapes as was formerly mentioned, is an ulceration arising from the roots failing to afford a due supply of sap to the bunches.—J.

TREATMENT OF VINES PLANTED LAST AUTUMN.

SOME time ago I purchased from a friend some Vines (Hamburghs, Royal Muscadines, Black Prince, Trebbiano, White Nice, and White Muscadine). They were cut down by him and planted one year in a vinery, but no fruit taken. I removed them and planted them in my own vinery (inside), in October last, and cut them down to about from 6 feet to 10 feet, according to strength. They were well rooted, and the shoots well ripened. I have been told I should cut them down much further. Should I do so?

I have also planted some strong Vines from a nursery in December last (said to be fit for fruiting). I have cut them down to about 5 feet. Is this right or wrong, and how should I act? May I venture to take a little fruit from either, or both, this season?—AN AMATEUR.

[The Vines planted in October, if the roots were kept slowly growing all the winter, may produce a few bunches if allowed to start the first season almost naturally—that is, giving them a little heat in March. If you are in doubt on the subject, we would reduce the shoots to 4 feet and 6 feet. Even if you leave them, and they show well, it would be well not to take above two bunches from the one and three from the other next season. What you should do will greatly depend on the care in planting. Those planted out in December would not have such a good chance, unless you have kept the roots growing by warm watering and warm mulching. We would reduce them a little, and take not more than one bunch the first season. You might, perhaps, have taken more than half a dozen bunches if the Vines had been left in the pot; but the plant would have been injured for the future. By planting out you have altered the circumstances.]

HINTS TO GARDENERS.

(Continued from page 256.)

It is my intention now to address such of my more fortunate brethren as are in situations. My remarks are offered to them in the best spirit, and I trust will be received with candour. I feel the task I have undertaken is an important one, bearing upon the happiness and comfort of a deserving class of the community. The first hint or advice I will give is, Now you are in a place strive to keep it, and in order to do that cherish a contented mind. Do not look at the, comparatively speaking, few large places with an envious spirit, but rather look at the many places that are worse than the one you are placed in, and the great number of your fellow gardeners that have no place at all. Then, again, if a place near you, or that you may hear of, becomes vacant, do not allow your mind to hanker after it.

I have known, and no doubt you have known also, many a good gardener who has been ruined by changing his situation so often, spending all his savings in the intervals between leaving one place and obtaining the next. In all places there are always some things that are not pleasant: it is, therefore, better to bear the ills we know than to change, and have others, probably worse that we know not. On this part of my subject I may aptly quote the maxim, the truth of which every gardener will peculiarly understand—

“I never knew an oft-removed tree,
Nor yet an oft-removed family,
That thrive so well as those that settled be.”

This being true, I repeat my advice, Be content with your present position, and, in order to keep it, attend to the following rules constantly and perseveringly:—

Always be respectful to your employers. Civility costs nothing, and always pleases. It may be that the employer has a taste for gardening; he may read gardening publications, and would like his gardener to adopt some mode of culture different to that he practises. If it is practicable it is undoubtedly the gardener's duty to try it. But he may fairly state in becoming language the reasons, if any occur to his mind, why in his peculiar circumstances such a practice will not answer; he may say that he is quite willing to try the particular mode, and will do so to the best of his ability; but if he fails he hopes his employer will not blame him. No lady or gentleman would think worse of his gardener for such language. Be attentive to hours of business. Every gardener will agree that this rule is an important one. The changes of our climate are so great that if a gardener is not constantly on the alert the greatest mischief might be done, especially where forcing is going on. An hour's hot sun, if the gardener was absent, might destroy a season's crop of Grapes, Peaches, Cucumbers, or Melons. Then, again, a sudden frost might occur, and if due attention is not paid to the fires, would be equally as fatal to tender plants: hence a gardener that desires to keep his place should keep a constant spirit of attention up in his mind, and never relax on any account whatever a regular, almost hourly, attention to his business and the weather.

Endeavour to improve the garden under your care. This rule every good gardener will be striving with all his powers to carry out. It may be the soil may require renewing; new fruit-borders making; fresh plantations of fruit trees planting; new forms of beds in the flower gardens, or, perhaps, more extensive alterations, such as putting up new houses, pulling down old worn-out houses, and other improvements. All these may appear to the gardener desirable to be carried out; but let him bear in mind that his employer must first be consulted, for he is the owner, and will have to bear the cost of these improvements; and if he says “No, I do not choose to be at this expense,” it is the bounden duty of his servant, the gardener, to submit contentedly to his fiat. No gentlemen, however, will be against his gardener improving his garden if he can do it without much or any expense; and in that point many a man may do much by making a judicious use of the means in his power, instead of folding his hands and saying to himself, “Because I cannot have this or that, therefore I will just go on as usual, and let the garden take its chance.” A man that does so, and thinks so, will not keep his place long. There are various ways of improving a garden without any great outlay—one is, the procuring new desirable plants. Some employers are very liberal in that respect, whilst others object to purchase any, or at least very few: hence many gardeners go about and exchange plants and cuttings with their neighbours.

In general, gardeners in this respect are very friendly with each other, but it may be carried too far. I think in all cases the employers ought to be asked for leave to allow this exchanging to be made. Such leave being obtained would prevent the least suspicion of dishonesty—a state of feeling that every gardener will zealously guard against. Some gardeners amuse their leisure hours in raising seedlings of fruits, vegetables, and flowers, with a view to improve the kinds: this is very praiseworthy, and ought to be encouraged. If the gardener is successful, as many have been, he ought to be rewarded for his skill in hybridising over and above his wages. If his employer chooses he will make a present of the stock after his own wants are supplied; but in all these points let me earnestly advise my brother gardener to be straightforward and open with his employer. He had better throw his seedlings into the fire than attempt to dispose of them in a clandestine manner. Many a gardener has lost his place, and, what is of far more consequence, his character

for honesty, for the sake of a few paltry shillings, or may be pounds. This is the height of folly, and always leads to poverty and distress. Nobody can help a dishonest man, and he suffers the consequences of such conduct, and his family with him: therefore, let every gardener strive to overcome all such temptations, and be strictly just in the smallest trifles; he will then be able to hold up his head in conscious integrity, and defy all his detractors and enemies, should he be so unfortunate as to have any.

Another important rule is that of being perfectly sober. Of all the degrading vices that men follow there is none so utterly despicable as that of drunkenness. In any pursuit of life it is destructive to him that indulges in it, but more especially to a gardener; he not only suffers himself, but all the objects under his care suffer also. If he has young men under him they will either despise him and his authority, or, what is more dreadful, they will follow his example. I am no great advocate for teetotalism. I think a man may enjoy a glass of ale with his dinner or supper, and it will do him good; but if he cannot enjoy it in moderation by all means let him abjure it entirely, and become a teetotaller. Many a promising, clever, intelligent gardener has split upon this rock, and has been totally lost and ruined. Avoid, then, the public-house as you would the great enemy of your souls.

Such, however, is the evident degradation of the drunkard, that I need not press upon my readers the great folly and sin of indulging in this worse than beastly vice. I am happy to bear testimony to the fact, that gardeners in general, as a body, are a sober class of men—in fact, they are of necessity so; for if any one becomes an habitual drunkard he is no longer a gardener.

As a rule, a gardener should endeavour occasionally to visit any good gardens within his reach; he must do this in order to keep up with the improvements of the age. It will be of service to him also as a means of comparison. He will be able to see where he is deficient or behindhand in any point. It would be a barren garden indeed where an observing man could not pick up something that he could profit by; but by all means let him ask his employer's leave to pay those visits. Remember, your time does not belong to you. You have sold it to your employer for a consideration, and as long as he keeps his part of the bargain, and pays you your wages, it is your bounden duty to give him your full time in return. You might state to him the advantages it would give you if he would allow you to go and see what your neighbours are doing, and how certain plans have been carried out; how their crops are progressing compared with your own, and many other reasons that will easily occur to your mind. Properly asked for, there is no doubt your reasonable request would be granted, only take care that your garden is left either under the care of a competent assistant, or so left as to take no harm till your return. Another point you will mind, and that is to return at the hour appointed. This is of some consequence, for you cannot expect to have leave again if you exceed the time given in the first instance.

As it is desirable as a rule to visit private gardens, so it is no less desirable to attend public exhibitions of the products of the garden. There the gardener may see the best specimens of fruits, plants, flowers, and vegetables. Exhibitions have, by awakening a spirit of emulation, done more to advance gardening in every branch to its present state of perfection than any other cause. Such being the fact, every gardener should try to visit once a-year, or at least once every other year, one of the great London shows: he could then compare the products of his own garden at home with those exhibited. If his own are equal he will rejoice; if inferior, he will strive to bring his up to the standard by all means in his power, and never will he be satisfied till he has succeeded in his praiseworthy endeavours. There are, it is true, many provincial shows where very superior things are exhibited, and in process of time they may approach nearer to the metropolitan ones; but no one can say they have hitherto done so in every respect. I hope they will, though I may not live to see it. Of course, a gardener will not neglect seeing those shows in his neighbourhood, as it will not be so much loss of time or expense to him as visiting London.

Some gardeners make it a point, in engaging a situation, that they should be allowed to exhibit; but the employer is the best judge in that matter—his will must be law to his gardener. If, however, all parties are agreeable, and enter into the spirit of emulation, the exhibiting and winning prizes will be a source of considerable gratification to both sides. The gardener in such a case will strive with all his powers to grow superior

articles in order to succeed, and will, or at least ought, to keep his garden superior also, so that his employer will have no cause to find fault, or think that his garden is used only for his gardener to grow things for the exhibition. Let the gardener, then, give no occasion for such an idea; but let him show that, after all, his ambition is chiefly to grow everything in the garden at all times just the same as if there was no exhibition to grow for or attend to at all.

Be civil to your fellow servants—is a rule that every man of common sense will adopt and make a constant attendant on his life; but it is certain that even civility may be carried too far. I would advise a gardener to keep his place and not be too familiar with the house servants. I have seen the evil of such close intimacy. The servants' hall or the housekeeper's room is no place for the gardener. Some, it is true, live in the house, and at meal times must of necessity be in such places; but at other times the gardener should be in his private room studying his business, or reading instructive works, or otherwise improving himself. If the gardener is married he should spend his leisure hours in the bosom of his family, instructing his children if he has any; or, if he has young men under him, he should devote one or two evenings every week to them, teaching them such things as they ought to learn, and encouraging them by his example to redeem their time, and thus bring them up to be worthy members of society and good gardeners.

If a gardener will attend to the above rules I have no doubt he will keep his place, and be able, by strict economy, to put by a portion of his wages, so as to have something to help him in his old age. That every gardener may be able to do so is the earnest wish of the writer.—T. APPELBY.

LATHOM HOUSE IN LANCASHIRE:

ITS HISTORY AND GARDENING.

To south-country readers the mention of Lancashire calls up ideas of massive cotton mills, spinning factories, bleach works, with blackened dwellings from the ponderous machinery by which it is supposed the whole length and breadth of the county is studded. But this notion is not a correct one; for Lancashire has its snug quiet corners, its rural glens and extended flats, where the smoke of factory chimneys is unknown and the sound of the locomotive whistle is never heard—although the latter sends its shrill notes into districts not disturbed by any other description of machinery, for it will be a long time yet ere the whole county be occupied in the way its busiest districts are, even should its farther progress be as rapid that way as it has been in the last fifty years. Nevertheless, the quiet solitude of certain districts seems threatened by the onward and irresistible roll of human industry which pervades the spots selected for its operations in the southern part of the county, that many an opulent landowner has felt alarmed by his property getting hemmed in by the clustering hive of human beings collected on all sides of him, busily intent on some calling of industry, and all crying out for more space; while every available resource is turned to account on their behalf, and an embryo town starts up where a few years ago the sportsmen or graziers were the only beings known in the district. This extension of a trading community is, of course, accompanied by its authors as well; and suitable sites for dwellings that might, by their outward decoration and internal comfort, be called mansions, are eagerly sought for, and, when once obtained, scrupulously secured from further innovation. Many of these structures are also possessed of gardens, containing all that can be obtained by the princely wealth of their owners; glass houses of newest and best construction, containing selections—or, it may be, collections—of the most fashionable plants of the day. Neither are luxuries of the table forgotten: Pines, Grapes, and Peaches are ripened in great perfection, and many vegetables are grown to a perfection equal to what is attained in the Vale of the Thames. The liberality with which manure is used has much to do with this; besides which, the soil seems peculiarly adapted for the growth of certain crops, of which Grapes, Peaches, Celery, Potatoes, and Carrots may be mentioned as the most important. In some places trees of considerable size are to be met with; but towards the west coast these are more scantily seen. The shrub seemingly most at home in Lancashire is the Rhododendron, which grows quite as fast and endures harder winters than the common Laurel, but some other things thrive well also.

The above preliminary observations on the busy section of the

county form a strong contrast with the quiet seclusion of portions of it only a short distance from these noisy hives of industry, where the mansions of an ancient and deservedly respected aristocracy stand forth in the snug retreats selected for them centuries ago; for Lancashire can, perhaps, boast of as many residences of Peers of the realm as most other counties, and some of these are of an extent and interest not to be surpassed anywhere. All readers of the daily and weekly prints must have heard of the princely reception Lord Derby has recently given to the ten thousand and odd volunteers who assembled at his invitation in the noble park of Knowsley, the seat of the worthy Peer. Mr. Appleby's account of Worsley, the seat of Lord Ellesmere, in a former Number of *THE COTTAGE GARDENER*, will also be familiar to our readers, while there are many others of like merit in a county that possesses so great a variety of landscape, and a tolerable diversity of other attractions; the one that forms the subject of this article being, perhaps, one of the most important in historical interest, and one that also by its other associations deserves to be more generally known.

Lathom House, the seat of Lord Skelmersdale, is situated on the northern boundary of that table land which has Liverpool for its southern edge, and the hilly district north of Wigan for its extreme direction in that quarter. A district tolerably level, but sufficiently elevated to insure a speedy drainage. The soil, a deep, black, sandy one—perhaps the best of all soils to till, but equally adapted for grass land as well; and the facility with which most crops grow on it indicates that the soil, if not the climate, is well adapted for them. Excellent meadows, smiling corn fields, and, more especially, extensive breadths of Potatoes and Mangold Wurtzel, meet the eye in all directions, whilst almost every hedge-side has its stream of water. The public roads, too, differ from most that are to be met with more southward, they being paved with large square stones, the same as the streets were done with twenty years ago, but which have since then given place to smaller ones. The paving of parish as well as turnpike roads might certainly with much advantage be copied elsewhere, as they present a cleaner aspect, and rarely require mending when once done. Having now described some of the features of the country, it is only necessary to say, that Lathom is several miles from Wigan, the nearest manufacturing town. Ormskirk, a small but thriving market town for agricultural produce and the like, being three miles to the westward and most accessible by rail.

Situated in a park of several hundred acres of a slightly undulating character, but, in a general way, of very productive land, Lathom House occupies a rather elevated position; and some good views from it would be obtained were the park not so profusely timbered as almost to hem it in on the most important sides. The mansion is a large Grecian building, the main building presenting a bold and imposing façade on its north and south sides; while the offices form wings of corresponding character on the northern side, and, projecting forward from the two corners of the main building on the northern or carriage front side, form a sort of rectangular court, the main house being reached by a massive flight of steps from this court. The building is of a pale-coloured freestone common in the neighbourhood; and the structure, being large and well proportioned, carries with it a degree of dignity not often met with, when a mansion is placed on a level plateau unaided by any remarkable natural features.

But Lathom can boast of more than its present architectural features, although these are more important than may generally be supposed; the central portion of the mansion being 156 feet, and with the wings 320 feet. This large mansion contains some apartments of corresponding magnitude. The entrance-hall is 40 feet square by 36 feet high. The ceiling is said to be a masterpiece of art, and will bear inspection with a magnifying glass, which few works of this kind will do. The saloon is 40 feet long by 24 feet wide, and the same in height; this is also a noble room. Other rooms are also good, and the whole presents that substantial character which is not met with everywhere, especially in dwellings built in the early part of the last century, which this one was; and the present spirited owner of Lathom is making considerable alterations and additions, especially to the offices and minor apartments, which when completed will render this mansion second to few in the kingdom.

But it is not the present building that renders Lathom remarkable in the eyes of the historian, excepting only as standing on the site of the former one which sustained a two-years

siege against the Parliamentary forces, commanded by such famous leaders as Fairfax, Egerton, and Rigby, wherein it is said the besiegers lost the extraordinary number of six thousand men, the besieged four hundred. These numbers are, doubtless, erroneous; but when it is known that the celebrated Countess of Derby was the defender, we may readily account for the desperate nature of the defence. It is said the siege was on the point of being raised, when a deserter from the stronghold informed the besiegers of the famine in the castle; for it was one at that time, and surrounded by a moat. This information led to the continuance of the siege until the place surrendered, and was razed to the ground. It would appear the noble lady became a captive, and on the return of more peaceful times made Knowsley her home, which I believe has been the paternal inheritance of that illustrious house since that time.

In some of the excavations rendered necessary by the present alterations going on, the site of the moat was cut through, and various interesting relics discovered; but the moat itself has been long filled up, and is now devoted to a more legitimate use, forming part of the pleasure ground, and healthy trees and shrubs now grow where the stagnant water of a stormy period assisted with other resources to make the building so strong as to resist such able leaders as those whose names are given above. As the present house is modern, and the grounds have but little inclination in any direction to give scope for terrace or Italian garden, the whole of the pleasure grounds present that natural system which some writers on such matters admire so much; but as the mansion is undergoing extensive alteration, we may fairly expect the grounds will have their turn also, as there is abundance of materials out of which to form some attractive features.

As before stated, Rhododendrons grow remarkably well, some single specimens being 18 feet high by 36 feet in diameter; a fine Portugal Laurel 26 feet high by 63 feet in diameter; an evergreen Oak 54 feet wide by 36 feet high; and a cut or Fern-leaved Beech is 40 feet high by 45 feet wide. Many other trees are equally large, a deciduous Cypress being upwards of 30 feet high; and there are some excellent Magnolias of the deciduous kinds, as well as other things not generally met with in such good condition so far northwards. It is not my purpose here to describe the grounds in detail; suffice it to say that the flower-beds are not numerous, but it is likely that a geometrical garden will be formed somewhere near the mansion, when the present building operations which engross all attention are over. Some useful walks intersect the pleasure grounds in various directions, mostly more or less curved, and one of these leading to the kitchen garden which is tolerably handy, but not too near to the mansion on its eastern side; and this being an important feature in the place deserves a more extended notice.—J. ROBSON.

(To be continued.)

ENTOMOLOGICAL SOCIETY'S MEETING.

THE first Meeting of the Entomological Society for the present year was held on the 7th of January, J. W. Douglas, Esq., the President in the chair.

Notwithstanding the inclemency of the weather the Meeting was fully attended. Various donations to the library were announced from the Royal Societies of London, Stockholm, Munich, and Tasmania, and different private individuals. The changes to be proposed at the ensuing anniversary Meeting in the Council and officers of the Society were announced.

Mr. Samuel Stevens exhibited some splendid Butterflies recently captured in Ceram by Mr. Wallace, including *Papilio Ulysses* and *Codrus*, and a large apparently new species.

Mr. Edwin Sheppard exhibited a very dark variety of *Hemephila abrupta*.

Mr. F. Bond also exhibited various rare Micro-lepidoptera, including *Gracillaria stigmatella*.

Mr. Gorham exhibited and pointed out the distinctions between *Micropeplus staphylinoides* and a new British species of the genus.

Mr. Grove communicated some notes on the time of the day at which a number of individuals of the Death's-head Moth were observed to make their escape from the chrysalis state, and which was found to be at variance with the observations of Dr. Verloren on the same subject.

Mr. McLachlan read a series of observations on the synonymy of the species of trichopterous insects described by Dr. Kolenati in the second part of his work on those insects just published at Moscow, and exhibited several new British species, including *Setodes interrupta*, and *Leptocerus albifrons* and *affinis*. Now that the attention of entomologists has been called to this neglected order of insects, it is not to be doubted but that the number of recorded British species will be greatly increased.

The Rev. H. Pickard exhibited a fine specimen of the richly coloured *Cleopatra* variety of *Gonepteryx Rhamni*, taken by his uncle in Yorkshire: and stated that, although regarded by many entomologists as a distinct species, Dr. Bois Duval had informed Mr. Westwood that he had reared both the red of ordinary specimens from one batch of eggs.

A specimen of the larva of a *Noctua* which had been found on the surface of the snow (probably dropped by some bird), was exhibited, being quite lively when found. And Dr. Wallace called attention to Dr. Standinger's statement of the repeated freezing of caterpillars; some of which, however, died during each experiment, whereby their numbers became gradually diminished.

Mr. Grove exhibited some specimens of the cast skins of various British *Sphinges*, showing the thin white pellicle or covering of the limbs. And Dr. Knaggs exhibited some insect eggs, which had been destroyed by a minute insect parasite belonging to the hymenopterous genus *Teleas*, of which specimens were exhibited.

Mr. Waterhouse read a memoir containing a revision of the British species of *Euplectus* and *Seydmœnus*.

Mr. Scott described a new British species of the case-bearing Moths, which he named *Coleophora Wilkinsonii*, the larva of which mines the leaves of the Birch. And Dr. Wallace exhibited some experiments for extracting grease from the bodies of insects by boiling them in benzine.

REPORT ON THE GARDEN PEAS.

GROWN AT CHISWICK DURING 1860.

By ROBERT HOGG, LL.D., F.R.H.S., *Secretary to the Fruit Committee.*

(Continued from page 261.)

15. Royal Dwarf CHARLWOOD & CUMMINS.

SYN. *White Prussian*; *Poor Man's Profit*; *Dwarf Prolific*.

Plant of medium growth, having a stem 3 feet high, generally simple but occasionally branching, and bearing about eighteen pods, which are sometimes single, but generally in pairs; they are from 2½ to 3 inches long, and usually well filled, containing from five to six Peas. The ripe seed is white.

Sown February 19th; the plants bloomed June 12th, and the slats appeared July 3rd; the pods were ready for gathering July 13th. The plant is fan-like in habit, and a prodigious bearer.

16. Victoria Branching.....NOBLE, COOPER & BOLTON.

SYN. *Paul's Early Dwarf* ...LAWSON & SON.

Paul's Prolific.....HURST & M'MULLEN.

Plant with a strong robust habit of growth, 3 feet high. The stem is generally simple, but sometimes branching, and bears from twelve to sixteen pods, which are 3 to 3¼ inches long, and half an inch broad, and contain from 7 to 8 large Peas. The foliage is dark green. Ripe seed white.

Sown February 19th; the plants bloomed June 16th; the slats appeared July 4th, and the pods were ready to be gathered July 16th. This is a very abundant bearer, but it comes into use at a time when there are several of the superior wrinkled varieties in season, and, therefore, it is not required.

17. Danecroft Prolific.....NOBLE, COOPER & BOLTON.

The plant very much resembles the *Victoria Branching* in habit. It is 3 feet high, robust, and frequently branching, and produces from twelve to sixteen pods, which contain from seven to eight Peas of good size.

Sown February 19th; in bloom June 23rd; slatted June 30th; and fit for use July 20th. Ripe seed white, small, round, and smooth.

This is an abundant bearer, and four or five days later than *Victoria Branching*, to which it is not superior. It comes into use at the same time as the following, to which it is inferior, and, therefore, is a variety that might easily be dispensed with.

II. MARROW PEAS.

Ripe seed white, large, smooth, uneven, compressed, irregular, or egg-shaped; skin thick. Foliage blotched.

18. Champion of Paris.....NOBLE, COOPER, & BOLTON.

SYN. *Excelsior*.....NOBLE, COOPER, & BOLTON.

Knight's Excelsior.....TURNER.

Stuart's Paradise.....FLANAGAN & SON.

Paradise Marrow.....NOBLE, COOPER, & BOLTON.

This is a rather strong-growing variety, 5 to 6 feet high, having generally a single stem, which is, however, occasionally branched, and produces from eight to ten pods. The pods are for the most part single, but sometimes in pairs, about 4 inches long, nearly three-quarters of an inch wide, and remarkably well filled with from seven to nine large Peas. Ripe seed white, medium-sized, somewhat flattened and pitted.

The seed was sown February 19th, and the plants were in bloom June 11th; they were slatted on the 23rd of June, and on July 6th the pods were fit to be gathered.

This is a very excellent Pea, an abundant cropper, quite as early as *Early Ringwood* and *Early Frame*, and considerably earlier than *Auvergne* and *Shilling's Grotto*, to all of which it is in every respect greatly superior.

19. Harrison's Perfection...NOBLE, COOPER & BOLTON.

Plant with a robust habit of growth, having a thick succulent stem, 3 to 3½ feet high, and large dark green foliage. The pods are produced in pairs from every joint, averaging sixteen or eighteen on a plant, but they are very irregularly and badly filled, and contain only from four to six Peas. The Peas are large and thick-skinned. Ripe seed white, medium-sized, and somewhat lentil-shaped.

Sown February 19th; bloomed May 29th; slatted June 16th; pods ready July 7th.

When this was first introduced it was considered a great acquisition, as being an early dwarf Marrow Pea, and as such it would have deserved all that was said in its favour, provided it had not the very objectionable property of filling irregularly. The pods early assume the appearance of being ready for use, but when opened are found to contain half-grown Peas, four to six of which only come to maturity. It ripens at the same time as *Prizetaker* and *Fairbeard's Nonpareil*, and is some days later than *Advancer*, which has the same habit, is far more productive, and has the additional advantage of being a sweet wrinkled Pea.

20. Thurston's Reliance.....CHARLWOOD & CUMMINS.

The plant grows to the height of 6 or 7 feet, and is very strong and robust. The stem is simple, and bears on an average from ten to twelve pods, which are generally single, but occasionally in pairs, and from 3½ to 4½ inches long. They are broad and flat, shaped like the pods of the *Blue Scimitar*, and contain from seven to eight very large Peas. Ripe seed white, large, unevenly compressed.

Sown February 19th; in bloom June 23rd; slatted June 28th; and pods ready to gather July 10th.

This is a very distinct and very useful Pea, an abundant bearer, and the pods are of a fine deep bright green colour, which is a recommendation to it when grown for market. It comes in at the same time as the *Auvergne* and *Shilling's Grotto*, but it is of a more tender constitution; for during the past summer, while the pods of these varieties filled well, those of *Thurston's Reliance* did not contain more than six to seven matured Peas—a character, however, which it does not exhibit in ordinary summers.

21. Queen of Dwarfs.....NOBLE, COOPER, & BOLTON.

A very dwarf-growing variety, not more than 6 to 9 inches high. The stem is thick, succulent, and sometimes branching, and the foliage of a dark blue green colour. Each plant produces about four or six pods, which are of a curious elliptic shape, and rarely contain more than three or four large Peas. Ripe seed white, medium-sized, egg-shaped, unevenly compressed.

Sown February 19th; bloomed June 15th; slatted June 28th; and the pods were ready to gather July 10th.

This is a very worthless variety, and unworthy of cultivation for any purpose whatever. The plant is so remarkably tender, that even in favourable seasons it does not develop nor fill its pods freely. In summers like the last it is chilled with cold, and in those that are warmer or more genial it is almost invariably attacked with green fly.

(To be continued.)

NEW BOOKS.

GARDENER'S AND FARMER'S VADE MECUM.*—Although this is in reality the seed catalogue of Messrs. Carter & Co., the enterprising seedsmen of Holborn, still it is so different to the generality of seed catalogues, that we have included it among our notices of New Books. Nearly thirty years ago we remember the comparatively small but always carefully and scientifically prepared catalogues of Mr. Carter, and from year to year we have watched their gradual development till they have now assumed a proportion unusual among trade catalogues. In the work before us, the usual tabular form with the column of general observations adopted last year are retained and augmented. There are numerous descriptive notices in the form of paragraphs of the newest kinds of vegetables and flowers, in some instances illustrated with woodcut engravings; and, to complete the whole, there are two excellent calendars, one for the gardener, and the other for the farmer. The work is published at the price of 1s., but we believe it may be had gratis by those who are customers of the house.

TRADE LISTS RECEIVED.

Butler & McCulloch's Spring Catalogue for 1861, Covent Garden, London.—We have here an admirable and very comprehensive catalogue of Flower and Vegetable Seeds, extending to nearly 100 8vo pages. It includes every novelty we can think of, and the amount of information, both descriptive and tabular, is very full.

Hooper & Co.'s Spring Catalogue of Flower, Shrub, Tree, and Vegetable Seeds, Covent Garden; and Catalogue of Vegetable and Flower Seeds, by Stephen Brown, Sudbury, Suffolk.—These are also full and excellent catalogues, carefully prepared, and contain a great many useful descriptions.

* **James Carter & Co.'s Gardener's and Farmer's Vade Mecum for 1861.** London: 237 & 238, High Holborn.

TO CORRESPONDENTS.

FRUIT TREES (Saml. Burn, Whitby).—You will find the following do well with you against your walls and fences. **APPLES.**—Cellini, Blenheim Orange. **PEARS.**—Louise Bonne of Jersey, Beurré Diel. **CHERRIES.**—Mayduke, Belle Magnifique. **PEACHES.**—Early York, Grosse Mignonne. **APRICOT.**—Moorpark. **GOOSEBERRIES** for open plantation, prize sorts.—London, Conquering Hero, and Wonderful, red; Catherine, Drill, and Leader, yellow; Thumper, General, and Overall, green; Queen of Trumps, Freedom, and Snowball, white.

POTATOES (Aut Caesar aut Nullus).—For exhibition in July grow Ash-leaved Kidney, Soden's Early Oxford, and Rylott's Flour-Ball. For exhibition in September, Fortyfolds and Flukes. Among "twelve Ranunculuses to name," you may exhibit any kinds that are named.

SLUGS—SALVIA PATENS (Amateur Hibernicus).—The "most effectual mode" of destroying them is to pare and burn three inches of the entire surface of the old garden. The usual mode is to sprinkle slaked lime over the surface late in the evening and very early in the morning. You will find directions for using *Salvia patens* as a bedder combined with *Calceolaria amplexicaulis* in our No. 506, page 150. Bed-out your *Tom Thumb* Geraniums eight inches apart leaf from leaf, not stem from stem. Your *Wattle Tree* from Australia is one of the Acacias.

REMOVING FRUIT TREES (Kate).—If you mean to buy trees, go at once to the nurseryman and arrange to have them in pots. You can then turn them out without disturbing the roots, and thus be enabled to plant them even late in spring if the building of your house is delayed. If you are only intending to move young trees already in your possession, we should take them up at once and put them in large pots, and place them on the north side of a wall until the house is ready for them. The ventilation proposed is ample without shutters in the wall.

LARDIZABALA BITERATA (Idem).—It is a hardy evergreen climber from the colder regions of Chili. It is well worth cultivating. Its pendulous spikes of peculiarly coloured flowers and its very copious foliage render it very handsome. It merely requires the protection of a wall. There is a drawing of it in the volume for 1850 of "Botanical Magazine," t. 4501.

GRASS LAID DOWN LAST YEAR (W. B. J.).—It would be better in some respects to feed it off this year; but we should not hesitate from mowing it if more convenient, cutting it whilst young, and giving it immediately afterwards a dressing of manure.

LEAN-TO ORCHARD-HOUSE AGAINST A STABLE GABLE-END (A Suffolk Subscriber).—We presume you do not mean to go higher than 12 feet 6 inches—that is, to the eaves of the stable. For an elegant house you might have a brick wall 3 feet high in front, and 3 feet of swing sashes above it. You could have a longer roof by a three-foot wall, and ventilators in it as in fig. 2. The same result, but at less expense, would be gained by five posts in front, 2 feet in ground, and 2 feet 9 inches above ground, and a plate 3 inches by 5 fixed along them. The front to the ground being filled up with one-foot-wide boards, and one of these made to swing in two pieces for the whole length for ventilation along the end of the stable, at the height of 12 feet 6 inches; five one-inch-and-half boards and 5 inches wide, to receive the end of the rafters, to be nailed to it. These rafters we would

have 1½ inch wide and 4 inches deep, and placed 18 inches apart, to receive squares 18 inches across by 12. The rafters will be fixed at the lower end to the wall-plate. Five of these squares close to the top should be framed, and made to open on a hinge or swing on pivots for top air. A Bellegarde Peach and Violette Hâtive Nectarine might be grown on the back wall, and the Vines planted within two feet of front. But for that we would plant the Vines at back. Drainage will be necessary, and fresh loamy soil in part at least.

TOBACCO SMOKE AND GREEN FLY (Glasgow).—If the trees when pruned are washed with soap water at 90° temperature, and when dry are painted with a mixture chiefly of clay, and sulphur, and a little tobacco water, the fly will not generally appear until some time after the fruit is set. If tobacco smoke is used in moderation, and the smoke presented cool (two or three slight smokings being always preferable to one severe one), we have never noticed any bad results. To the inexperienced we recommend shag tobacco for this purpose. The mischief generally takes place before smoking by allowing the fly to get a-head. The first fly seen should be removed with a small brush; if three or four can be seen, smoke that night. There are many means, but none better than tobacco smoke.

CUCUMBERS IN A HOUSE (W. W.).—Is your flue 3 feet high as well as the beds? We would have preferred the flue being under the bed, or partly so. Does the side of the flue form the wall of the pit also? Then the side of the flue will give a good amount of heat to the soil, &c. Without that, well-heated tan would be the best for bottom heat. The manure and sawdust will do if you do not plant out your Cucumbers until March or so. As the flue goes first along the east side, we would use that for the first Cucumbers and the west side for later ones. If we devoted the house to Melons and Cucumbers too, we would have Cucumbers in the first half both sides, and Melons on the other half both sides. The reasons for this are, that though when growing and green the plants do need much different treatment, the Melons as they approach ripening require a drier atmosphere to give them flavour than would suit Cucumbers, and, being at one end, that can be better secured.

SPOT IN CUCUMBERS (X. X.).—You could not do better than fumigate the empty house with sulphur: you have given it a good dose, certainly. The blackness is owing to a sulphate of lead being formed. Let it alone, and it will disappear as the oxygen of the air gets the better of the sulphur. You have given us too little information about your house and your management to enable us to say what caused the spot in your case; but thorough cleanliness in walls, fresh air from 60° to 65° in temperature, and fresh sweet soil are the great preventives. When once introduced, it is next to incurable. Last season was a bad one for Cucumbers. You would see that Mr. Fish did little good with them, and many more good gardeners generally extra successful had their difficulties with them. We must just try and hope on.

VULCANISED INDIANRUBBER RINGS FOR HOT-WATER PIPES (J. Viner).—These vulcanised rings answer perfectly for the joints of hot-water pipes and for portable hothouses. They are the best joints now in use, for they can be easily undone without hurt or hindrance. Mr. Beaton has these joints in use at the Experimental Garden, and some joints in the same apparatus are of "tow and tuck," and they see no difference in the two kinds of joints; nor is there much or any difference in the first expense of them. He has seen one instance only in which a joint with a vulcanised ring was made leaked, and he has heard of two more instances of leakage in the vulcanised joints; but no sort of hot-water joint that has yet been made in this country is or has ever been entirely free from leakage more or less. We have seen all on the leak, and could stop all of them; but we do not know yet the exact way of stopping a chance leak in a vulcanised ring. What we should first try to stop such a leak would be to endeavour to twist round the pipe a little in the socket, so as to adjust some defect in the fitting of the iron surface with that of some portion of the ring; and a few raps on the junction or joint with a mallet would be as likely as anything to stop the leakage of vulcanised joints. We have no hesitation in saying these are our own favourite joints, but we have no knowledge of where they are made or sold. The hot-water apparatus people are the proper persons to apply to for all proper fittings.

POULTRY AND BEE-KEEPER'S CHRONICLE.

POULTRY SHOWS.

FEBRUARY 13th and 14th. LIVERPOOL. (Poultry and Pigeons). Sec., Mr. A. Edmondson, 4, Dale Street. Entries close January 26.

MARCH 6th and 7th. PRESTON. Sec., Mr. H. P. Watson, Glover Street, Preston.

MARCH 13th and 14th. PLYMOUTH. Sec., Mr. W. R. Elliott, 5, Windsor Villas. Entries close March 1.

APRIL 1st and 2nd. SUNDERLAND. Sec., John Littlefair, 6, Bridge Street. Entries close March 19th.

MAY 21st, 22nd, and 23rd. CHESTERFIELD AND SCARSDALE. Hon. Sec., Thos. P. Wood, jun.

MAY 22nd and 23rd. BEVERLEY. Hon. Sec., H. Adams. Entries close May 4th.

JUNE 4th, 5th, 6th, and 7th. BATH AND WEST OF ENGLAND.

N.B.—Secretaries will oblige us by sending early copies of their lists.

THE GAME SEASON.

ALTHOUGH by name, and happily, in fact, we are the "Poultry Chronicle," yet we have somewhat to do with Game. We quote it weekly, and doubtless many of our readers take an interest in the subject. As "The Country Gentleman," a review of Pheasants and Partridges as they have been during the past season will be acceptable; the more so, because we believe that the breed and the supply are, after all, to be better judged in London than elsewhere. It is the great market, and all local ones are mere tributary streams.

Game, bred in the first instance for sport, suffers the fate of

most things in our busy country, and becomes marketable; but it has a common fate in other respects—it has charms for people in every walk of life, and of both sexes, and there are those who take as much interest in the breed of their three or four score of tame Pheasants, as others who kill their thousands in the three days' battue. There are also those who will be glad to hear about Pheasants and Partridges, and who will after a time ask questions on the subject. We have known sisters who had their pets in the shrubberies, the produce of a nest that had been "mown out," and reared under a hen afterwards; and we have known such a one to keep watch and ward all day when the brother and his friends were shooting. That day no message would take her from home—no sight, no visit had temptation or attraction sufficient to induce her to give up "keeping," as her brother's friend called it.

We do not wonder at it. It was a beautiful sight when, at the sound of the breakfast-bell, the Pheasants came from laurels and shrubs racing across the smooth lawn to the breakfast-room window. It was an anxious moment that first inspection lest there should be one or two short in number, or a broken leg or wing among them.

While we do not for an instant aspire to the distinction of a sporting paper, we must believe that notices of Game and notes on Natural History interest a large class of readers; and circulating as we do among a very numerous country connection, we are anxious to give them all the pleasure and information we can. The mutual communication of interesting facts in Natural History of things that at first appear unworthy notice soon acquires importance. Such have formed the foundation of delightful books. Take, for instance, the late Bishop of Norwich's work on birds, take Gilbert White's book, you will find in both numerous anecdotes—indeed, the first is composed of them, and the other shows the charms such trifles have even for minds of the highest order. To some it will seem childish if not ridiculous to note the first arrival of many of the warblers, of the Swallow, or of the Nightingale; yet the same person has during the last three months noted the barometer and thermometer twenty times every day. It is not straining the term to say that the most careless person would soon become interested, and the advent of the spring visitors would be as well understood as the appearance of certain bulbs and flowers. As soon as they are known they are looked for; there is not one of these visitors that has not a tale to tell. They are the harbingers of summer, just as we look for frosty mornings when we hear the Robin's clear, bold note, and they are often telling lessons to the younger branches of a family.

Many pleasing facts and much useful knowledge are lost because some who have never ventured to do so fear to rush into print, and others think that, although these things interest them, yet they must of necessity be known to every one else, and readers will wonder at their simplicity in imagining there can be either freshness or importance in their observations. This is a mistake. The link that has connected the discoveries of science has been often due to a child, or an uneducated person; and it is as true of knowledge as of money, that possession and loving go together.

We, therefore, invite all our friends and readers to contribute to our stock of these interesting facts. We insure them much and pure pleasure from it, and we promise them instruction of the most delightful kind of a nature that never palls. We hope many will have to thank us for a new pursuit, and will wonder hereafter how they were able to see the habits of birds without observing them, and how they have neglected pleasing and instructive friends for so many years.

Our subject has led us so far that that which began it must be reserved till next week, when we will notice the extraordinary Game season of 1860: and we propose in the course of the next two months offering some little instruction about Pheasants, and the way to keep them at no expense beyond that they will repay, even if they do not become a source of profit.

FATTENING TURKEYS.—Much has been published of late in our agricultural journals in relation to the alimentary properties of charcoal. It has been repeatedly asserted that domestic fowls may be fattened on it without any other food, and that too, in a shorter time than on the most nutritive grains. I made an experiment, and must say that the result surprised me, as I had always been rather sceptical. Four Turkeys were confined in a pen, and fed on meal, boiled potatoes, and oats.

Four others of the same broods were also at the same time confined in another pen, and fed daily upon the same articles, but with one pint of finely pulverised charcoal mixed with their meal and potatoes. They also had a plentiful supply of broken charcoal in their pen. The eight were killed on the same day, when there was a difference of one and a half pounds each in favour of the fowls which had been supplied with the charcoal, they being much the fattest, and the meat greatly superior in point of tenderness and flavour.—(*Germantown Telegraph*.)

BRAHMAS KNOCK-KNEED.

I SHALL be much obliged for your advice in the following difficulty. I have some Brahma fowls now about six months old, three cocks and a pullet, and the cocks are all more or less knock-kneed, and I cannot account for it. The largest of the cocks is so bad as seriously to injure his appearance and interfere with his walking. Their toes are also considerably bent. Can you suggest any means of cure? Also, do you think, supposing the fowls had been stunted in their growth during the late severe weather, that they would start afresh when the mild spring weather comes? I cannot but think my Brahmas have been stunted, as they are so small of their age. They ought to be good birds, as they are from eggs bought of a well-known breeder of Brahmas.—**BRAHMA.**

[The knock-kneed birds have not been strong enough to bear growth or to carry their weight. They have not been fed well enough. They were, probably, late birds, and they require more food in autumn than they do in summer. It is very difficult to strengthen birds after they are four months old. Meal mixed with new milk, chopped egg, and crusts of bread, are the best things. But do you say the toes are also someway affected? We are disposed to think the floor of your house is at fault. If it is, that is the cause of all your troubles. Stone, brick, or wood will cause it, and no food will counteract the effect of cold and chill arising from these floors. It is that affects the feet and knees. Remove the floors, or, if that be difficult, cover them six inches thick in gravel, and you will soon find an improvement in your birds.]

NANTWICH POULTRY EXHIBITION.

THIS was held on the 8th and 9th instant, and the following is the list of prizes awarded by the Judge, E. Hewitt, Esq., of Sparkbrook, near Birmingham:—

SPANISH.—First, Mr. Woolley, Bunbury. Second, J. Grocott, Nantwich Third, T. Trevitt, Wistaston. Highly Commended, Capt. Price, Stapeley House. **Chickens.**—First, T. Trevitt. Second, S. Forster, Crewe. Third, T. Bowker, Nantwich. Commended, J. Grocott.

DORKING (White).—First, C. B. Davies, Herdswick Hall. Second, T. Burgess, Burleydam. Third, J. Pimlett, Norton.

DORKING (any other colour).—First, Mrs. E. D. Broughton, Wistaston Hall. Second, T. Burgess, Burleydam. Third, Mrs. W. Tollemache, Dorfold. Highly Commended, E. Tudman, Ash Grove, Whitechurch; T. Burgess. **Chickens.**—First, T. Burgess. Second, E. Tudman. Third, Mrs. E. D. Broughton. Highly Commended, Mrs. W. Tollemache. Commended, E. Tudman.

Ducks (Aylesbury).—First and Third, E. Viggor, Over. Second, H. Acroyd, Doddington Hall. Commended, W. H. Hornby, Shrewbridge Hall; J. Grocott, Nantwich.

Ducks (Rouen).—First and Second, T. Burgess, Burleydam. Third, R. Ashley, West End.

Ducks (any other variety).—First and Third, T. Burgess, Burleydam (East Indian). Second, E. Bower, Broad Lane, Nantwich (wild).

GESE.—First and Third, T. Teasdale, Spurston. Second, W. Furnival, Norton.

TURKEYS.—First, H. Acroyd, Doddington Hall. Second and Third, W. H. Hornby, Shrewbridge Hall.

SWEETSTAKES FOR GAME COCK.—First, T. Burgess, Burleydam. Second, E. Bower, Broad Lane, Nantwich. Third, J. Evans, Crewe. Highly Commended, J. Heath, Nantwich. Commended, J. Kitchen, Over Lane, Winsford; J. Wilkinson, Norbury.

SILVER CUP, value three guineas, presented by the Licensed Victuallers of Nantwich and neighbourhood, to the best Game Cockerel of any colour.—Silver Cup, T. Burgess, Burleydam. Second, T. Eaton, Bagiley Lane, Audlem. Third, A. Heath, Winsford. Fourth, G. Hollinshead, Minshall, Vernon. Highly Commended, S. Edwards, Nantwich; J. Bebbington, Broad Lane; J. Parton, Nantwich; R. Ashley, West End; E. Bower, Broad Lane; W. Sowerbutts, Nantwich. Commended, J. Parton, Nantwich; J. Edwards, Nantwich; J. Capper, Nantwich; R. Ashley, West End; C. Lewis, Canal, Wharf, Nantwich.

SWEETSTAKES FOR SINGLE COCKS (Hamburgh, any variety).—Prize, T. Dale, Middlewich.

DORKING (any colour).—Prize, J. Heath, Nantwich.

COCHIN-CHINA.—Prize, E. Tudman, Whitechurch.

COCHIN-CHINA (cinnamon, buff, or partridge).—First, E. Tudman, Whitchurch. Second, W. Forster, Nantwich.

COCHIN-CHINA (any other colour).—First, J. Dodd, Minshull Vernon. Second, J. Dutton, Bunbury. Third, G. Williamson, Nantwich. *Chickens*.—First, J. Dodd, Minshull Vernon. Second, J. Dutton, Bunbury. Third, G. Williamson, Nantwich.

GAME (Black-breasted or other Reds).—First, E. Viggor, Over. Second, W. Bott, Nantwich. Third, W. Galley, Nantwich. Highly Commended, J. Heath, Nantwich. Commended, R. Ashley, West End; E. Bower, Broad Lane.

GAME (any other variety).—First, T. Burgess, Burleydam. Second, Miss Bebbington, Durham Heifer, Nantwich. Third, T. Parton, Chorlton.

GAME (any variety).—First, J. Parton, Nantwich. Second, J. Lewis, Nantwich. Third, E. Viggor, Over.

GAME (Black-breasted and other Reds).—*Chickens*.—First, T. Burgess, Burleydam. Second, J. Parton, Nantwich. Third, W. Hope, Nantwich. Highly Commended, R. Ashley, West End. Commended, J. Heath, Nantwich; A. Heath, Winsford.

SINGLE GAME COCK (Black-breasted and other Reds).—First, T. Burgess, Burleydam. Second, J. Pedley, Nantwich. Third, W. Sowerbutts, Nantwich. Highly Commended, T. Whittingham, Batherton; S. Edwards, Nantwich.

SINGLE GAME COCKS (any other colour).—First, E. Bower, Broad Lane. Second, T. Burgess, Burleydam. Third, T. Whittingham, Batherton. Highly Commended, R. Ashley, West End; W. Forster, Marsh Lane.

GAME (any other variety).—*Chickens*.—First, T. Burgess, Burleydam. Second, J. Grocott, Nantwich. Third, J. Judson, Nantwich.

POLANDS (any variety).—First, T. Burgess, Burleydam. Second, J. Heath, Nantwich. Third, T. Sproston, Middlewich. *Chickens*.—First, T. Sproston, Middlewich. Second, T. Burgess, Burleydam. Third, J. Heath, Nantwich. Commended, G. Williamson, Nantwich.

HAMBURGHS (Golden-pencilled).—First and Second, D. Harding, Middlewich. Third, J. Grocott, Nantwich. Highly Commended, W. Griffiths, Nantwich. Commended, J. Leach, Crewe.

HAMBURGHS (Silver-pencilled).—First and Second, D. Harding, Middlewich.

HAMBURGHS (Golden-spangled).—First and Second, T. Burgess, Burleydam. Third, R. Forster, Nantwich.

HAMBURGHS (Silver-spangled).—First and Second, T. Dale, Middlewich. Third, T. Rigby, Fenny Wood, Winsford.

BANTAMS (Game).—First, T. Burgess, Burleydam. Second, W. Griffiths, Nantwich. Third, J. Grocott, Nantwich.

BANTAMS (any other variety).—First, D. Wilson, Winsford. Second, J. Heath, Nantwich. Third, S. Boffey, Willaston. Commended, D. Harding, Middlewich.

SWEEPSTAKE (Game Bantams, Single Cocks).—Prize, T. Burgess, Burleydam.

THE RABBIT (*LEPUS CUNICULUS*).

ITS HISTORY, VARIETIES, AND MANAGEMENT.

(Continued from page 250.)

THE older naturalists were not very successful in demonstrating the characteristics distinguishing the Rabbit from the Hare. The differences in their size and colour are sufficient for ordinary purposes, but are not such differences as to distinguish species in zoological classification. Even as late as 1772, Daines Barrington, in the "Philosophical Transactions," could offer no better specific characteristics than such as depended upon the relative lengths of the bones of the hind legs, and their difference in length when the hind legs were compared with the fore legs.

More recently Cuvier offers these marks of distinction:—The Rabbit is less than the Hare; ears rather shorter than the head; the tail less than the thigh; coat yellowish-grey with some red; throat and belly whitish; ears grey without any black; brown about the tail.—(*Regne Animal Mammifères*, 255.)

Such are the scientific characteristics of the wild Rabbit; but these do not apply to the domesticated varieties, for many of them are as large as the largest Hare, and in colour so closely resembling the latter animal, as to be exhibited as "Hare Rabbits." Whether they are hybrids is still a matter of doubt, as it was as far back as the time of Buffon.

For all ordinary purposes the domestic Rabbit, of which alone we have to treat, is distinguishable by its colours, texture of fur, and size and position of its ears.

The first attempts to rear varieties and improve the qualities of the Rabbit, are attributed, probably correctly, to the monastic establishments of the Continent; for the brethren, who had quite enough of abstinence from flesh meats, adroitly arranged that Rabbits, like game, should not be included among them, but be allowably eaten on *maigre* days.

M. Mariot Didieux states that it was not until about 1830 that attention was paid in France to the extensive and profitable breeding of Rabbits. It commenced near Paris, but the proceedings were kept secret, opposition was feared, and information

upon the subject was only obtained by stratagem. About ten years subsequently Rabbit culture made great progress both in France and elsewhere. In Belgium and Holland there are prudent, determined, calculating men, who try experiments cautiously, and it is only when they are sure of success that they walk bravely to the goal. Thus the Dutch and Belgians have already produced Rabbits in sufficient numbers to sell as many as "three hundred and fifty thousand" a-week in the Ostend markets alone, to be forwarded and sold in the London markets. Less than ten years ago this source of industry was unknown in those countries. The amounts just cited are official returns of the Custom-house statistics. They witness highly in favour of the breeding of these little animals, and their selling price increases instead of diminishing.

The breeding on all the Dutch and French coasts of the channel is on a very extensive scale. The linen trade being greatly depressed had left a great many hands unemployed in 1847. Some bred milch goats, others bred Rabbits to sell or live upon. We have visited farms in the Pas de Calais, says M. Didieux, and always found Rabbit pie in use, both among masters and men.

In the farms in the neighbourhood of Troyes there were Rabbits bred which brought in annually from 1000 to 2000 francs (from £40 to £80 sterling). Yet this is only considered a trifling trade, and is being extended every day. In the markets of Troyes there are 150,000 francs worth of Rabbits sold every year. In the suburbs of Chalons-sur-Marne Rabbits are bred entirely for their fur with immense profits.

In 1849, the Countess d'Albertas established in her Château near Gardane a perfect *stud* of Rabbits, that comprised a number of varieties of great beauty, either as meat or fur, as silky fur of different shades and lengths. She realised great profits and sold breeders to Spain and Italy. She thus procured labour for the inhabitants of her locality, and gave meat to the poor. Moreover, she assured us that the manure she derived from her warrens had largely rewarded her by its enrichment of her lands. By judicious crossings she has produced half breeds of magnificent beauty, some of which have measured 60 centimetres (about 30 inches) from the tips of the nose to the end of the tail.

Monsieur l'Abbé Fissiause, Chaplain of the Hospital at Marseilles, breeds Rabbits to provide the poor with meat. The skins alone pay his expenses.

In 1856 M. le Comte d'Epresmeuil, Secretary of the Acclimatation Society, visited an establishment for breeding Angora Rabbits at St. Innocent—a small village about two miles from Aix in Savoy, on the heights that overlook the lake of Boerget. This establishment, says he, is interesting, because particularly it procures work for women, children, and the poor in bad weather. It is of the simplest kind, since it consists in breeding Angora Rabbits of all colours—grey, white, black, brown, and particoloured. They are kept in large rooms, and fed with bits of all sorts of green stuffs. The fur is taken four times a-year, carded, spun, and woven in the village by the inhabitants, who live out of this simple industry, which it would be so easy to propagate in France. Childrens' dresses are sold at as much as 30 francs each. This Angora warren was established about twenty years ago by M. Lard; it is now directed by his widow. After having had the idea of repairing his broken fortune by breeding Angora Rabbits, M. Lard had that of placing them out to keep with the inhabitants of the village. He gave, and his widow still continues to give, four pregnant Rabbits; and they are paid for by returning half the young when three or four months old.

These Rabbits are bred in troops in stables, granges, rooms, lofts, and other places as extensive. They are fed in summer with a quantity of green plants, and in winter with dry leaves. Their fur is not woven as the Count d'Epresmeuil states, but is carded and spun by the ancient method, and knitted by the women into childrens' frocks, stockings, drawers, chest pieces, gloves, and other warm articles of clothing. These are much sought after by the English that frequent the baths of Aix; and Madame Lard has never enough in her warehouse, although the manufactory of St. Innocent furnishes more than £800 worth a-year.

Madame Lard buys the fur of the breeders at 60 centimes (6d.), the 32 grammes, which makes about 19 francs 20 centimes for one kilogramme (2 lbs. weight). We forgot to inquire while on the spot how much fur by weight one Angora Rabbit of middle size would furnish in a year or four combings; but if we

recollect rightly it is about 250 grammes, or half a pound, value 4 francs 50 centimes.

In England attention to the breeding of domestic Rabbits on an extensive scale has never become general. We have noticed what Gervase Markham said upon the subject; and in 1718 we learn from Mr. Bradley that a few persons cultivated Rabbits largely. He had engraved a drawing of an artificial warren, and of the proceedings of one of these patrons of the Rabbit he states the following particulars:—

"I shall take notice of something extraordinary relating to a warren, as it was contriv'd and practis'd by the late Lady Belassis at Kensington; her ladyship, among many other curiosities which were cultivated in her gardens, and volaries, disposed one part for the breeding and feeding of Rabbits, in such a manner, as that, by a constant supply of nourishing food, she might draw at any time of the year a sufficient quantity to oblige her friends, and serve her table; but to prevent the unsavoury taste which generally attends the flesh of tame Rabbits, consulted as much as possible the nature of the wild sort, how much the open air was beneficial to them, for this end she wall'd in a large square place, and paved it at the bottom, but in some parts had large heaps of earth, ram'd hard, and turf'd, for them to burrow in; but this, which was her first attempt, fail'd, by frequently falling in upon the Rabbits: This however gave her no discouragement; she had a terrass built with arches, and fill'd with earth, leaving proper places for the Rabbits to go in and out; but still there were many inconveniences, as the falling in of the earth, and the males destroying the young ones, besides the difficulty of taking them when they are wanted; but at length concluded to build distinct cells for every female, so order'd that they might hide themselves at pleasure, or take the liberty of the enclos'd ground when they thought fit: these cells were cover'd with boards, lying penthouse-wise, made to open at discretion, for the better catching the Rabbits, and to prevent the destroying of the does that had young ones: Over the entrance of every cell was a trap-door, either for keeping them in or out; at the south end was a covered place where a couple of buck Rabbits were chain'd for the service of the does, and, according to the warreners rule, were enough for twenty five couple of females: In this place was their food, which was chiefly the refuse of the garden, with some bran and oats, and large blocks of chaulk stone, which they frequently eat to prevent the rot.

"The pavement or floor was lay'd slopewise for the better carrying off the water, and conveniency of cleaning, which was done very often, and contributed greatly to the good thriving of the Rabbits."—(*General Treatise on Husbandry, &c.*, i. 21.)

This example met with but few imitators; and it is only since the knowledge of the vast numbers of Rabbits which are imported weekly from Ostend and elsewhere has become diffused that attempts are making in many places to breed them in this country very largely.

(To be continued.)

POULTRY SALES.

THE very full attendance of buyers at Mr. Stevens' last sale proves how strongly the desire to possess good specimens of poultry has fixed itself in the minds of the public at large. Even those who are not strictly speaking fanciers, and who never contemplate becoming exhibitors, are generally ashamed of the comparatively useless set of mongrels that they formerly tolerated, and require birds that are of a more valuable character, either as table fowls or egg-producers.

And whilst the poultry mania is at an end, and persons have given over the idea of making a fortune by keeping six hens and a cock, there is a steady demand for really good birds of all varieties. Even Game fowls, that for some reason or other seldom produce their value at King Street, sold at a very fair price on Tuesday last. Good Dorkings are always in demand at this season, and the few cocks in the sale went for more than they were really worth. Some Sebrights of Mr. Leno's realised 10s. to 12s. each.

Mr. Everett's Carriers were good, some very good, and the result was that prices varied from 10s. to 50s. each. Mr. Chalker sent some good Carriers, but rather too fine and racehorse-like for the London fanciers. But, being most useful as crosses for heavier birds, they elicited some brisk competition amongst some four or five of the best breeders. Amongst Toy Pigeons, a pair

of Turbits produced nearly £1, although the cock only was good. The sudden rise in the demand for this pretty breed is evidently due to the £5 prize offered for the best pair at the forthcoming Preston Show.

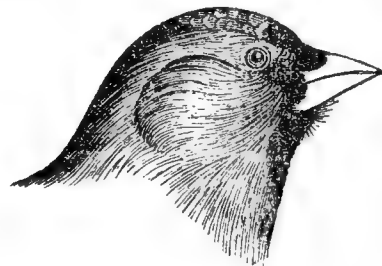
We are glad to see so steady and wholesome a demand for really good and useful stock of all descriptions.

THE CANARY AND THE BRITISH FINCHES.

(Continued from page 216.)

6.—THE REDPOLL (*Fringilla Linaria*).

German, Flachslink or Bergzeisig. French, Sizerin or Altarin.



THE Redpoll is the smallest of our British Finches. It derives its name from the red spot, of a fine carmine shade, on the top of the head or poll. In general plumage they are of a dark greyish-brown above, and lightish beneath. The primary covert-feathers of the wings have a broad yellowish-grey margin, which form a sort of bar across the wings. Beneath the beak is a black spot, and the breasts of the cocks are blushed with a rosy-red colour. Like the Linnet, they lose this red colour at the first moult in confinement, which is exchanged for a yellowish shade. The red on the head also changes to a greenish-orange. The beak is small, pointed, and rather flattened at the sides, of a yellowish colour with a brown tip. The wings are large in proportion to the size of the bird, and it has great powers of flight. So active are they that I have found them the most difficult of all cage birds to catch in the aviary, or when let loose in a room.

They are partially migratory in habit, breeding in the north and making their appearance in large flocks in winter, generally in company of the Siskins. They frequent the alders and willows. They are often caught in great numbers by the London bird-catchers in the clapnet; and they also readily enter the trap-cage to a call bird. When the flights are about, they are sold very cheap in London, 1d. or 1½d. only being asked for fresh-caught birds.

Although they mostly retire in spring and breed in the north, yet a few remain and breed in England, at which time they are said to be much shyer than in winter. The nest is described as being a very small and neat structure, something resembling a Goldfinch's nest.

The eggs are said to be of a pale greenish-blue, spotted with brown at the larger end. They are very lively and active birds, climbing about the cage or among the branches often with their backs downwards like the Titmice, continually chattering and frequently uttering their shrill cry, "Kevit, Kevit," by which they may easily be recognised on the wing. From their docile and active habits, and the ease with which they are kept, they are general favourites with the young bird fanciers. Their song is little more than a prolonged sprightly chatter, but their ways and manners are pleasing and attractive, ever on the move and continually billing and feeding their companions in a very gentle and affectionate manner.

In 1847, I bred a Mule between a cock Redpoll and hen Canary. It bore much resemblance to the Redpoll, but was rather larger, though not so large as the Canary. The colour between that of a grey Canary and a Redpoll, the breast yellow, a black spot beneath the bill, and a few white feathers in the tail. It was a cock and a merry singer, though it had not a strong voice. In 1848 he paired with a hen Canary; they built, laid, sat, and hatched four young ones. These, however, bore no resemblance to a Redpoll, being in all respects like Grey Linnet Mules; and as there were two cock Linnets loose in the room, I make no doubt one of them was the real parent, although the Redpoll Mule acted in every respect as their father. From their hardy constitution and tractable nature, they are the birds most frequently taught to draw their own water and work for their food. There are various devices and different forms of cages for

that purpose. A common sort is that of a board that hangs against the wall, and another with slide for sand to catch the dirt projecting beneath. There is no wire over the front, sides, or top, which are quite open. A small bow perch is inserted in the back, to which the bird is attached by a brace, swivel, and chain. In others, the front, sides, and top, are wired-in like an ordinary cage, and these are much the better, as the brace can be dispensed with; for although the bird may seem well, yet I have often found the bobbin that passes behind the legs to chafe the skin and cause large sores and ultimate death, on which account I dislike the use of a brace. On the upper part of the cage is a small box for seed, closed with a lid, and the bird has to open it every time it feeds. Below, in front, hangs suspended a glass of water, the bird being provided with a bone thimble at the end of a cord by way of a bucket to draw its own water. But great care and attention should be paid to these poor little prisoners, as any slight entanglement of the string may prevent the bird from drawing its water, and a few hours' neglect may cause the death of the poor bird.—B. P. BRENT.

(To be continued.)

MILK-PAN VERSUS STRAW HACKLE.

In the Christmas Number of your valuable Journal appeared an article on bee-feeding from the pen of "UPWARDS AND ONWARDS," into which was introduced a criticism on the above important bee cause in a manner so seemingly unfair to the latter, that I trust you will grant me space to endeavour to set in a better light that time-honoured appendage of our apiarians. In the case alluded to by your correspondent, the blame rested rather on the shoulders of the fair bee-keeper than on "those abominations called straw hackles." Why were they not renewed before they got into the dilapidated state he describes? The hive so attended to was found confessedly "all right." The subsequent flow of honey coming in upon her ladyship I should be more prone to ascribe to a good bee year and the sound lecture on management with which she was, doubtless, favoured by her visitor than to the adoption of the milk-pans.

At first sight, it seems strange that our comparatively mild winters should tell so much more destructively on bees than the very severe ones of Russia or America. This is explainable, however, by the greater humidity and variableness of our island climate. It consequently becomes of the first importance that the bee-keeper should guard against these evils by the most suitable covers for his hives placed singly on pedestals. Those enjoying the shelter of a bee-house are rendered safe by the mere wrapping up with some woollen stuff.

The question then comes to be, What is the most suitable cover? After a still longer experience than your correspondent, and having made it a point to hunt up every conceivable cover for bee-hives, I was at last obliged to confess that for defending these insects from the extremes of heat and cold, preserving them healthfully over the winter, and promoting their early swarming the following summer, with all their faults no better substitute can be found than the old dome-shaped straw hive and hackle of our ancestors, with their pleasing appearance and many kindly associations. During the working season, for depriving-hives and those subject to frequent inspection the hackle might give place for the time to some device more easily handled: for instance—the straw cylinder recommended by Taylor, wrought on a hoop, with a wooden ornamental top instead of zinc, the whole well painted and thoroughly ventilated. Straw hackles, like most very cheap commodities, cannot be expected to last long, and should be renewed at least once every season; otherwise they speedily become both unsightly and prejudicial to the bees, offensively steaming in the sunshine, a fit receptacle for mice and moths, falling to pieces every time handled—in short, thorough "abominations."

My procedure is as follows:—Beginning of October, when satisfied all my hives are safely found with at least six months' store (feeding being supplied as required in the spring, the less they are disturbed in the interim the better), I have my fresh hackles ready—no flimsy affairs, but each the carefully drawn straw of at least three good OAT sheaves (wheat, although whiter at first, is too open and brittle), pulled tightly at top and wound round into a peaked head fully a foot high, with a light straw rope; or, what is neater, tie securely with cord lower down, and then, from the cord upwards, cut the straw into a little conical top about four inches high. Give the cone a coating

with Portland cement, which prevents moisture penetrating the top through the cut ends of straw. Or, should straw be an object, the durability of the hackle can be enhanced and its appearance improved. After it has been placed nicely balanced over the hive and the entrance cut on the apex of the cone, place the centre of a square yard of oiled cotton cloth (cost 7d.), tied securely round its base, spread smoothly over front of thatch, folding the surplus in behind, where pin or stick it in position; the whole secured by two iron hoops, the one 21 and the other 17 inches in diameter, painted black. The upper hoop will be a guide to clip off the corners of the cloth into a circular form. A couple of coats of stone-coloured paint will make the cloth more lasting. Hackles so furnished will be found impervious to moisture and much longer serviceable. What a snug, clothed, cosy appearance to the eye, were it nothing else, is a row of hives so protected to withstand the rigour of a winter such as the present, compared to the cold bare nakedness of a clumsy reversed milk-pan. How is such a mere thunder plump protector to preserve them from the drifting rain, snow, or sleet? Perhaps your correspondent's hives are of an unusual thickness, but even then straw is very retentive of moisture when once absorbed. Besides, the inmates of exposed hives must be much more susceptible to all the variations of our changeful climate. The sunshine of a winter's day beaming on the hives will at once allure them forth to the frosty atmosphere never to return; and, what is of still more importance, at the end or beginning of a season, when the population are at the minimum, a sudden change to sharp cold will force the bees to draw up together off the brood, which, left uncovered, must chill and perish, causing the bees afterwards considerable labour in carrying out the dead grubs, and protracting the swarming season. The late Mr. Payne, quoted by your correspondent, although a milk-panist, became latterly alive to this fact, as I think he somewhere recommended binding such hives all round with haybands.

In conclusion, might I suggest, for the consideration of your correspondent, the propriety of closing up that abominable four-inch central communication to his supers? (the "reason why" he will find under Stewarton-hives in No. 610 of your Journal), and in lieu thereof cut four inches or so out of each end top band; and instead of the hot baking to which his supers must be subjected during the dog days, underneath the earthen plate give the thorough protection of a good thick thatch, and he will be in the way of producing supers of a purity more in keeping with the Cockaigne taste, cause the honey-buyer at Messrs. Fortnum & Mason's to smile upon him, and, instead of being quizzed, fairly astonish the rector.—A. RENFREWSHIRE BEE-KEEPER.

OUR LETTER BOX.

PULLET PARALYSED (*Widgeon*).—Your Cochinchina pullet with legs and wings affected in the way you mention has either a blood-vessel ruptured on the brain, or has something seriously obstructing her egg-organs. In either case it arises from her being overfed. Your diet of Indian meal and Indian corn, oats, scraps, &c., is surfeiting. Give her a dessert-spoonful of castor oil, and keep her upon boiled potatoes, and a little ground oats or barley given three times a-day, and let her range freely. If not relieved before, give her another spoonful of castor oil at the end of two days.

GOLDFINCH MULE WITH INJURED WING.—"HYBRID'S" Goldfinch Mule, whose right wing is injured, appears from his description to be dislocated. Probably the wing was pressed too hard against the wires of the cage in catching, and that the joint has slipped out of the socket. To remedy which he should take the bird in his left hand, back uppermost, pass his thumb over the back of the neck—in that way the bird may be held securely without squeezing; extend the right wing, which is the injured one, with the right hand, and, placing the points of the second or third finger under the joint, stretch the wing steadily, pressing the joint back in its place, when I expect it will slip back. Some force will be required; but care must be taken not to break the bone or pull the other joints out of place.—B. P. B.

LONDON MARKETS.—FEBRUARY 11.

POULTRY.

The supply of poultry is small. We expect it will be so for some time, and we shall not be surprised if we have to record high prices arising from scarcity till the chickens of the year are fit to kill.

| | Each—s. d. | s. d. | | Each—s. d. | s. d. |
|---------------------|------------|--------|------------------|------------|--------|
| Cock Turkeys | 0 0 | to 0 0 | Pheasants | 4 0 | to 4 6 |
| Hen do | 0 0 | " 0 0 | Partridges | 2 0 | " 2 3 |
| Capons | 0 0 | " 0 0 | Grouse | 0 0 | " 0 0 |
| Large Fowls | 5 6 | " 6 0 | Pigeons | 1 4 | " 1 5 |
| Smaller Fowls | 4 0 | " 4 6 | Hares | 3 0 | " 3 3 |
| Chickens | 3 0 | " 3 6 | Rabbits | 1 4 | " 1 5 |
| Geese | 6 0 | " 7 0 | Wild ditto | 0 8 | " 0 9 |

WEEKLY CALENDAR.

| Day of M th | Day of Week. | FEBRUARY 19-25, 1861. | WEATHER NEAR LONDON IN 1860. | | | | Sun Rises. | Sun Sets. | Moon Rises and Sets | Moon's Age. | Clock before Sun. | Day of Year. |
|------------------------|--------------|--------------------------------|------------------------------|-----------|-------|-----------------|------------|-----------|---------------------|-------------|-------------------|--------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | |
| 19 | Tu | Crocuses. | 29.807-29.531 | deg. d g. | N. | .04 | m. h. | m. h. | m. h. | | m. s. | |
| 20 | W | EMBER WEEK. | 29.498-29.444 | 47-25 | N.W. | — | 8 af 7 | 20 af 5 | 14 m 3 | 10 | 14 5 | 50 |
| 21 | Th | Sun's declin. 10° 27' S. | 29.778-29.657 | 42-30 | N. | — | 6 7 | 22 5 | 8 4 | 11 | 13 59 | 51 |
| 22 | F | Orontium japonicum. | 30.051-29.918 | 42-30 | N. | — | 4 7 | 24 5 | 54 4 | 12 | 13 52 | 52 |
| 23 | S | Snowdrops. | 30.163-30.117 | 44-20 | N. | — | 2 7 | 26 5 | 27 5 | 13 | 13 44 | 53 |
| 24 | SUN | 2 SUNDAY IN LENT. ST. MATTHIAS | 30.150-30.085 | 45-20 | E. | — | 0 7 | 27 5 | 54 5 | 14 | 13 35 | 54 |
| 25 | M | Borago orientalis. | 30.104-29.801 | 44-18 | S.E. | — | VI. | 29 5 | 15 6 | 15 | 13 26 | 55 |
| | | | | 45-30 | S. | .01 | 56 6 | 31 5 | rises | O | 13 17 | 56 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 46.2° and 32.0° respectively. The greatest heat, 59°, occurred on the 25th, in 1830; and the lowest cold, 8°, on the 20th, in 1855. During the period 132 days were fine, and on 106 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

Asparagus, when the shoots have made their appearance in the frame, give plenty of air. Prepare beds for permanent beds if the ground works well; plenty of good rotten stable manure to be incorporated with it. *Carrots*, sow a small patch of Early Horn on a warm sheltered border where the soil is dry, and works freely. Those in frames to be thinned when an inch or two high. *Cucumbers*, the greatest attention should be paid to the state of the bed for the first fortnight after the plants are turned out; the watch-stick to be examined daily, as it is a much better criterion to judge by than a thermometer in the frame, which only indicates the heat of the atmosphere in the frame; cover according to the heat of the bed. If it will allow of it, a small portion of air to be left on every night, which may be given in the evening if the frame has been closed for three or four hours. *Horseradish*, prepare the ground for planting; dig it two spit deep; no dung to be used unless the ground is very poor. *Jerusalem Artichokes*, plant. *Onions*, plant the bulbs of last year that begin to grow; they will be found very useful where there is a scarcity of sound ones. They may also be planted for seed. *Parsley*, a sowing to be made as soon as the ground is in a fit state to receive the seed. *Peas*, make a sowing of Knight's Dwarf Marrow and some other approved sorts, recently noticed in THE COTTAGE GARDENER, to keep up a succession. *Potatoes*, plant some on a warm sheltered border, if the weather is mild and favourable. *Parsnips*, get in a good breadth in ground deeply trenched, with the manure at the bottom. If there are any old roots remaining in the ground they should be dug up before they begin to start, and laid in sand or dry earth to continue good for spring supply. *Spinach*, sow a few rows between the early Peas, if there is a scarcity of the autumn sowing. *Turnips*, sow some seed of the Early Dutch on a gentle hotbed, or on a warm border where the soil is light and dry. All vacant ground to be *trenched* or *dug* as quickly as possible, and the portions marked off for the different crops; they will be ready for sowing at a favourable and opportune time.

FLOWER GARDEN.

Fork the beds and borders, and plant where intended the flower-roots, trees, and shrubs, and sow the different sorts of annual flower-seeds where the ground is dry, and in a mellow state. Increase the stock of herbaceous perennials by parting the roots. Plant Carnations, Pinks, and Picotees in beds or borders where they are required to remain for flowering the ensuing summer. Plant Anemones and Ranunculuses in open, dry weather to flower this season. Protect Tulips and other bulbous roots from severe frost, especially those that are advancing above ground. Hedges, where wanted, may now be planted of any sorts of deciduous or evergreen kinds for fences, shade or shelter.

FRUIT GARDEN.

If the several directions previously given have been

followed, the pruning, tying, and training of espalier and other fruit trees will now be finished, the fruit quarters manured and forked up, and the trees that were infested with moss and lichen dressed. Look to the Fig trees; prune and train those that require it, tying or bending the strong shoots down to induce them to push out a number of very short-jointed bearing shoots. Provide grafts for next month.

STOVE.

Increase the atmospheric moisture in proportion to the increase of heat and light. Look closely after insects; the snails are very fond of young buds and tender shoots at this season. Some of the *Ipomœas*, *Echites*, *Pergularias*, the *Stephanotises* to be pruned in, fresh potted if necessary, and plunged in a moderate bottom heat, using but little water until the root action has made some progress. The *Echites* are more especially liable to suffer from the free application of water.

GREENHOUSE AND CONSERVATORY.

We would advise, after the late very severe weather, a free circulation of air, accompanied by as much atmospheric moisture as can be managed without drip. Many plants from long confinement, and especially where persons entertain a fear of giving air, will be drawn, and, having received so much artificial heat, the leaves of many will assume an unhealthy appearance. Continue the treatment of plants as lately advised.

PITS AND FRAMES.

The plants in these structures will require to be carefully watched, as the warmth produced by the increased power of the sun is apt to induce growth at the expense of constitutional vigour: it is, therefore, desirable to keep them as cool as may be consistent with safety from frost, with free admission of air in favourable weather; and if the air is very keen and cutting the lights to be opened on the side least exposed, and in such a manner as to prevent the cold air from acting injuriously on the plants.

W. KEANE.

DOINGS OF THE LAST WEEK.

FINE weather, reminding one of the smiles of April. Stole away for a day to see what the frost had been doing amongst Rose growers, lovers of the sombre Pine tribe, and advocates of orchard-houses as the cheap and effective resources of the million. As respects the two former, found much to grieve and sadden the spirit amid destruction of the beautiful, and wrecks of the lovely and much-prized. As respects the latter, found that scarcely anything had suffered that had received the shelter of the glass, and the dry and quiet air of the orchard-house; while companions of similar things in the garden and against walls had been thoroughly injured for the season, if not ruined altogether. With a continuance of such seasons as the present and the end of 1859, covering with glass must be looked upon as the most economical means for securing crops of many desirable things. But we cannot enter on these matters here.

The work done has been chiefly matter of routine—digging, trenching, nailing where practicable, and potting off singly, chiefly

small variegated Geranium plants, that ere long must be turned out into temporary beds to make way for others. *Dwarf Kidney Beans* just showing their leader have been transplanted from a box in which they were thickly sown into six-inch and eight-inch pots, putting four plants or so in a pot, taking care that the soil used was previously heated, and warm water used for watering, so that no check was given. Some previously potted, four plants in six-inch pots, were turned out without dividing the plants into part of a bed of soil, with warm leaves below and the advantage of a hot-water pipe at the side. These will succeed those now bearing. Sowed a handful more seeds in a portable wooden box, to come in again as succession. We use this mode instead of sowing at once in the pots for two reasons. First, economy of room, as the box that will hold seedlings for a couple of dozen of pots will require no more room than three or four pots, and room where heat is, even to a foot square, is never allowed to have a sinecure even for a day. Room! where shall we find room? is the cry. Again: By not allowing these seeds when sprung to remain longer in the boxes than showing the second joint above the seed-leaves, or even commencing the third, they will stand thickly uninjured; and when then transplanted, a dwarfer habit is given to the plants, and the bearing, we think, for the room is more abundant than when the Beans are sown at once in their fruiting-pots. At this early season, this mode causes the plants to knot for bloom almost at once without stopping, which, though it increases the quantity to be gathered from a plant, lengthens the period before produce is gathered. In winter and early spring, therefore, we do not stop dwarfs; after March or so, we generally do; but then we do not put above three plants in an eight-inch pot. The seed-leaves after performing their office shrivel and drop. Two leaves appear at the next joint, and between them the stem. At present we leave all alone, because early produce is the chief object; but when heavy crops are wanted later, we nip out the point of this tiny shoot after it has made a joint, and thus get fresh shoots from the axils of the leaves.

Among all forced vegetables that are the better for being forced, these Beans take a first place. Unless in warm and dripping summers, it is rare that they are as crisp out of doors as when grown in heat; but, do what you will, it is always akin to danger to place them in forcing-houses, for if such a thing as a thrips, or an egg of one, be about the premises, there is a wonderful attraction between them and the leaves of the Beans: it is safest, therefore, to grow them in pits by themselves. One crop being cleared out, the place could be thoroughly cleaned and sulphur-smoked before planting another.

I once practised an easy mode for a succession crop in a pit, that had a little bottom heat from leaves, and about a foot of light rich soil above them. There were two divisions in that pit; the second was planted just as the first began to show bloom. The plants were put in or seeds sown in rows 20 inches apart; and as soon as the first plants showed bloom, another row was sown between, and before they were big enough to need all the room, the first lot were first thinned and then removed, and then with a little fresh soil in the place, a third sowing was inserted between the rows, and so on, the one crop being ready to take the place of the other as the crop was gathered. By giving more soil, and rich waterings, and top dressings, we have also gathered the whole season, from April to October, from one sowing, by constant pruning off barren and gathered-from twigs, and preventing one pod being allowed to swell above the size when it was fit for cooking. They are never fit for that purpose when they do not break easily when bent. The sorts we prefer are the small Newington Wonder for cooking whole; and the China Dwarf, popularly called Robin's Egg, for general purposes. We cannot say we find fault with Sion House Forcing, or Fulmer's Forcing, and still less with the Cream-coloured dwarf, &c.; but for general purposes we prefer the above.

Earthed up the first *Potatoes* in pots, and gave them a sunny spot in an average temperature of 55°. Placed a row of them in front of Peach-house, between low front wall and trees, there being three successions in that row, and planted a bed in a deep earth pit, placing about 18 inches of warm leaves at the bottom, and 6 inches of dry soil above them, the *Potatoes* 4 inches apart in rows, 18 inches from each other, and then covered with 6 inches more. These *Potatoes* were sprung 1 inch or 2 inches previously, and only one, or at most two, shoots left to a set, or small *Potato*. The bed is covered with old sashes, just laid on a rail at back and front and will be protected from

frost; and as soon as a straw or an evergreen wattled hurdle will do, the lights will be moved.

Uncovered the Sea-kale in the Mushroom-house, finding that what was put in last is coming faster than we want it, and we must be sparing until we see how the weather may yet treat our hardier vegetables. Spawnd and earthed up the Mushroom-bed lately mentioned; but as the heat is still regular, have not yet beat it firm down. Border in first vinery ranging an inch below the surface at 65°, put frames above the leaves placed there, put a layer of six inches of hot leaves inside the frames, after forking up the leaves on the border, on removing aside the cool surface, that removed being again banked against the outsides of the frames. These frames will do for striking *Verbenas*, *Geraniums*, and for starting *Dahlias*, and placing fresh-potted-off plants for bedding just to give them a start. If care is taken to give no more heat than the above, the roots of the Vines will be benefited, and the heat can thus be economised. Of course, we get more heat inside the box than in the Vine-border. Wheeled hot leaves mixed with a little dung to make a bed 20 inches high, on which to place a three-light frame, which, meanwhile, will be filled with plants, and by the time we get more fermenting material the plants will be moved, and the bed raised for *Cucumbers* or *Melons*. Saved a part of the hottest and best of the heap, turned it carefully, watered it where dry, and then covered all over with a couple of inches of long litter, to assist it to heat nicely and sweetly. This will be used for the first leaf-and-dung-bed for two lights, which we mentioned some time ago as designed for *Cucumbers*; but as it was formed chiefly of leaves, the heat was never, except in warm nights, hot enough for *Cucumbers*, scarcely rising above 50° in cold nights, though covered. That was, therefore, filled with cuttings of *Geraniums*, *Verbenas*, *Lobelias*, &c., which have done, or are doing, admirably, and will bear being taken out by the time the dung-heap is nice and sweet to permit of the bed getting a fork over, adding a foot or so in height, and keeping a foot or so of the sweet on the top. The little healthy *Cucumber* plants now in small 60's, may have another shift, where they are in a brick pit heated by hot water, and where, also, some will be planted. By keeping the plants where they are until they even fill six-inch pots no harm will accrue, and we can thus keep them in a small space before planting out, or growing them in large pots.

I sometimes meet instances of people, who are as hard up for room as I am, turning out their *Cucumbers* and *Melons* when they have only a rough leaf or two, and then filling up the frame, pit, or house, with all sorts of plants between them. Where practicable, I prefer keeping these plants, *Cucumbers*, &c., in a light, or a couple of lights, by themselves until they are some size, and thus we can give them a cosy corner, keeping the other places designed for them finally filled with whatever we deem necessary, and getting these removed before giving the space almost entirely to the *Cucumbers*. Something like a system of this kind is the most economical, and best every way for the health of the plants. Even a pit or a frame may be made to hold as different plants as either of these lights by having moveable divisions of light boards, or even, calico, &c., between the lights. Last season we were called on by a young ambitious gardener, who was in a sad pickle with his *Cucumbers*. He had put out three two-light boxes, six lights in all—all he had for that and many other purposes. The first light showed that the best policy would be to begin afresh—the miserable little things would have been better in small pots, and less than half a light would have held them all; and owing to want of heat and cramming the beds with *Calceolarias* and other things hating much heat, the whole were a mass of vermin which smoking seemed unable to subdue. With the manure at his command, two lights were as much as should have been attempted at first, and there the other plants should have been kept until a second was ready; and the second would have had a good succession of *Cucumbers*, and the hardier things could have been moved under shelter first, and the next hardiest taken from the last frame last, so that the *Cucumbers* put out strong might have had the place pretty well to themselves. Of course, we would not object to a few plants that liked heat being struck in a corner, but we rarely see plants turned out small do well when the bed is crammed over with other things. Gathered first *Black Prince Strawberries*.

The frost last night was severe, but the north wind, and skiffs of snow, and the clear sky, gave all due notice.—R. F.

PRESERVING SOWN SEEDS FROM BIRDS AND MICE.

At page 268 I find red lead recommended to prevent the ravages of birds and mice on newly sown seed-beds. As red lead, or lead in any form, is a very deleterious article, and if it does not enter the tissues may adhere to the surface of the root crops, I would advise the use of powdered carbonate of barytes, as being far preferable. This article is innoxious, or nearly so, to the human race or the larger animals, yet it is certain death to birds, mice, and rats. It may be used in the same manner as the red lead for the small seeds, as well as for Peas and Beans. A few of the dressed Peas, a little of the powder mixed with Oatmeal, or dusted betwixt two pieces of bread and butter in the way that deadly poison arsenic is too often used, and placed near the runs of rats and mice, will soon effect a clearance of these pests without danger of accident.—B.

[There is not the slightest danger of injury in any way from using red lead to preserve sown seeds from birds. We are not sure that its colour is not concerned in deterring the marauders from pilfering the seed. It certainly would neither enter the tissues nor adhere to the roots in any way that washing and the process of cooking would not remove. We would use the red lead much sooner than we would carbonate of barytes between pieces of bread and butter if we did not wish to risk poisoning our cat or dog.—EDS. C. G.]

THE ROYAL HORTICULTURAL SOCIETY'S GARDEN AT KENSINGTON GORE.

THE first meeting of the Fruit and Flower Committees of the Royal Horticultural Society in the new offices at Kensington Gore took place on Shrove Tuesday—a fine frosty day, the frost of the preceding night being 12° here (in Surbiton) and at Chiswick Garden, and the consequence was that no one would venture to send flowers out for prizes with the glass down to 20°. Yet Mr. Eyles sent up a choice collection of Chinese Primulas and some Camellias from the garden of the Society; and the Messrs. Henderson, of the Wellington Road Nursery, sent a collection of a dozen kinds of Cyclamens in bloom; another collection of Chinese Primroses, including plants of the white and the purple Fern-leaved *Primula sinensis*. This departure from the usual form of the leaf of these Primulas was first exhibited in Regent Street; and it, of course, must be continued from cuttings—at least, probably so, as the chances are that seedlings from the Fern-leaved Primulas would come with the leaves of the type plant.

On the other hand, we had evidence in Mr. Eyles' collection that the nearest variety or variation in these Primulas comes just as true from seeds as the best natural species in our books. Mr. Eyles saw a new-coloured *Primula sinensis* advertised, he got a packet of the seeds, and all the plants which have yet bloomed of the new colour came quite true to the new colour, and a very nice colour it is, and a welcome addition to the conservatory, and to the show-house. It is a rosy red, and quite different from the purple red of the old and original kinds. The first of this breed was shown by Mr. Eyles at one of our last autumn meetings, and the colour is now even better. It is of the fimbriated, or frill-on-the-edges, strain of Primulas, which strain is the opposite to the florist's merit in a *Primula* flower. Nothing short of "rose edge" will satisfy the rules of floristry; but frills and wavy margins to flowers of good colour are always welcome to the ladies. Therefore, as the garden and rooms of the Society are now in London, and as ladies will be constantly in and out to see the flowers for the shows in these rooms, and in the beds and fancy borders of the new terrace garden, anybody and everybody who may have new flowers from foreign parts, or new seedlings of their own, ought to send them up there to be judged and spoken about, and be made more known.

There is no fault in any new or old flower which is merely for decorative purposes—that is, for beds and

borders and for drawing-rooms and conservatories, if it has no signs of the character of a florist's flower about it. All that are wanted in decoration plants are good habits and good colours, and all that is admitted and acted on as far as possible in the awards of the Floricultural Committee; but the tests we use are most severe in both classes of flowers—in the florists' or exhibition flowers, and in those for mere decoration. But a triangular flower, if such could be got, is just as good for decoration as round ones are for exhibitions, and both kinds will have their rewards according to their different merits, so that no one need now hesitate to send up new flowers to London to be judged.

The Fruit Committee is now held in the same room and at the same time as the Floral Committee, and after the subjects are judged the things are all re-arranged and set ready for exhibition, and all members or Fellows of the Society and their friends may go in and see them. The show-room is lighted entirely from the roof, is well heated and ventilated, and is large enough and sufficiently ornamented for a billiard-room in a duke's mansion, and is more in that style than anything the Society had hitherto aimed at. Part of this office building is to form there the back wall of the Italian arcade, which encloses the terrace garden: the elevation of these offices, therefore, must be to suit the arcade, and that accounts for having the light of the show-room from the roof, which is all but flat, and in large squares of very thick glass. It is the best arranged room in London for seeing flowers in-doors to the best advantage, and is on the opposite principle to the murderous old iron tent for the Chiswick shows, which THE COTTAGE GARDENER condemned the first day the experiment was tried with it. But the Crystal Palace people went just as far wrong in the first flower show along the front whole-length side of the Palace, as the Chiswick authorities did when they darkened the roof of the iron tent, and got in the light on to the flowers over the shoulders from behind the visitors—the worst arrangement for seeing colours effectively of all other modes of admitting light. Now we have it, the light of day, through the light of practical science, without a single theoretical wave in it, and it is open now to the gardening world to see and to learn the difference.

Out in the garden the works have progressed much more rapidly than any one accustomed to such things could expect, seeing the torrents and the pourings of last summer, and the Greenland of this winter. The large coloured engraving of the plan of the garden, which was distributed to the Fellows of the Society, gives but a very faint idea of the beauty of the place. But it is so entirely a terrace garden, and so jealously excludes the faintest idea of any other style, that hundreds had been led by the engraving to doubt of the telling effect of the beauty of the garden on the public mind. But when you come to see the idea of the artist realised, and put into shape and order before you, flight by flight as you go up from the side entrance, or come down from the conservatory, which is on the highest part of the slope, you must have a queer notion of terrace gardens if you will not be highly delighted with the whole thing. I never went near it from our anniversary of last May, when the first turf was only just lifted, to this day (Shrove Tuesday), and the first thing I did was to step over every foot of the paths without any one with me; so that I could judge for myself, without any influence for or against all or any part of the whole; that was before the meeting, and before the sun was on the meridian of its course, which is very near the meridian of this terrace garden, I went over it again in the afternoon with a good light from the sun coming sideways, and I think I am not deceived in the opinion that the new garden at Kensington Gore will be the nearest step to the perfection of that style that we have in England; but it is a fleabite as compared with the grounds of the Crystal Palace and

those of Kew. It is just a town garden in the first style of the art; and so it ought, seeing the mere finishings and furnishing will cost over £5000 the acre. There cannot be twenty acres in, or within, the arcades, which is strictly the terrace garden, but say twenty acres over which the ground landlords are to spend £50,000 and the tenant just as much, and if the thing, or any part of it, should turn out otherwise than as it ought, it could not be excused on the plea of want of money. I never strove to temperate my feelings when I saw things in my own way going awry; and I think that is the only reason I can lean to for the enjoyment—the real downright pleasure I can feel in a thing with which I have no earthly concern when it comes up to what I have been taught to call the “real thing.”

Now, although our town garden is yet in the rough, I felt a good deal of the pleasure of hope when viewing it by myself, and more so on seeing this hope is not likely to be long deferred. They are pushing on vigorously, the heavy planting is all but finished—I mean all the large trees for the dark groups on the plan. The slopes and flats for the different flights of the terrace are set out, and could soon be finished for turfing. All the main walks are as far forward as the rough gravelling of them; and all the Box compartments are finished, planted, and partly set off. This setting off was the only thing in the plan on which I had my own doubts. It consists of small spaces as for flower-beds, coming in between the lines of a free-flowing tracery in Box, and they (these spaces) are to be filled with a diversity of coloured gravels, so to speak. A few of these compartments are already filled, or covered in with the, or rather with only two, colours—a grey slaty blue, as the colour of ice at a distance, and a pure white. Well, hitherto—for it is of no use to disguise facts—my eye has only been tutored to pure white, and to two or three shades of red, in Box-work decoration, on the fly-fancy style of composition—that is, pure white Reigate sand, or sand like it in colour, such as that which Mr. Taylor, at Shrubland Park, uses to plunge his pots in, and the different colours of the gravel used in our walks—say four shades of red and pure white; and I had my doubts about the effect of introducing tints of colours in gravels along with tints of colours in real flowers. And here I must insist on another Committee for the Society, a Committee of ladies high up in the peerage, to decide if it is fair and proper to set hard grit in colours in contrast or in combination with our soft tints of colours from the varieties of variations in our seedlings, for I am persuaded that no other source is able to decide the point for us—and I shall tell you why I am persuaded. I have as firm a hold on the effects of the shades and tints of colours, as douce Davie Deans had on the precepts of the Camaronians in the *Bride of Lammermoor*; and yet I was bewitched to look most favourably on the effects produced by the simple contrast of the first few examples they made of grit with plain gravel, and smooth, dark brown earth. Depend upon it this will tell, for I have no prepossession of it either way; and the first and last impression of a thing, be it the hazle or the azure of the eye of a maid of honour, or the glowing of the evening sun on a flower-bed, are sure to be right, notwithstanding the world-wide difference which may rise between the extremes of first and last.

The lines of dwarf Box in these Box tracings are most beautifully designed, and will be perfectly new to a great number of the Fellows of the Royal Horticultural Society, and cannot fail to become the sampler patterns for imitations in this style of terrace gardens; and the coloured grit or gravel that will be employed to fill in the designs cannot fail to lay a more sure foundation for the better arrangements of the tints of flowers than we have yet had access to; and thus the very thing which I at first dreaded would lead to namby pambyism in flower gardening, will be a sure and certain source for

the more extension of the natural tints of flowers, and a more extended use of different sized beds in the designers of flower-bed's compositions in order to embrace a larger assortment of different shades of colours from flowers. A new field will be thus opened for the cross-breeders of popular flowers for decoration, and any tint, and every shade of colour will find a patch or bed, and the proper place for it in composition planting.

The mauve and light lilac tints which were so fashionable in 1859 have given way already, and all the shades of the newer magenta colour are fast taking their places. New shades of Verbenas, and of the Nosegay breed of Geraniums will soon make this magenta colour as fashionable in the flower gardens as it is already in the tops and bottoms of Parisian fashion; and he who can best keep pace with the magazines of fashion with his new seedlings, may least fear the schedules of the income tax. Every seedling that will tell on the fashion of the day will be sure to pay, and anything that will pay its cost is as sure to tell; and were it not on such terms alone, let alone the call for high artistic designing, I should hail the flowing lines of Mr. Nesfield, at Kensington Gore, as the best auxiliaries to what I have myself been aiming at in my doings and sayings for the last twenty years; and I congratulate the Fellows of the Royal Horticultural Society on the charms and excellencies of their town garden as they are already manifested in the rough, and look forward with great interest to the day on which Her Gracious Majesty will open it in person for us and ours, and the like of us, or all who like to see a first-class town garden kept in first-rate order by first-class gardeners, for I should like all to see it; and if the public could see it, on certain days, by paying a small sum for a great sight, as was once in contemplation, what with the Queen herself and the Royal Family at the head of it, and the novelty of the thing so near to the richest and most fashionable parts of London, there could be little fear about those thousands of pounds having been cast in a sinking fund. The thing must surely pay and be a credit to all concerned.

Talking about sinking money puts me in mind that I have a sinking-border this spring in my own private garden, which is sinking still, and will sink. There is no border at Kensington Gore which is half so good, however, nor any thing like it, and yet it is as sure to pay me as the Bank of England. Any one who may wish to have a sinking-border like it, will be sure to have it pay almost anywhere; and it is not an expensive thing by any means, and if it were and would pay, where would be the odds? My sinking-border was thoroughly frosted through and through to the depth of 22 inches this last January; but five inches were the greatest depth of frost in any other part of the garden at the same time. I made the frosted border on the sinking principle in order to pay. Surely as I made pump water in July into frosted plates for butter at the breakfast table, I could see no great difficulty in frosting a border to the depth of 44 inches, the double of what I did. I said I made it to pay, and this is how I did it. At the beginning of the frost I took off the frosty crust for three or four days running, till I made sure of a running frost for some time; then I emptied the whole border to the depth of 22 inches, or a little deeper, by throwing the soil across the path on to an open piece of ground which was then well frosted. I then spread the soil from the border over all that piece, and it made a layer of about 3 inches, and that also was soon frosted; but while it was freezing I took the advantage of the frost to get up the frosted crust from the surface of as much of the rest of the garden ground as filled the opened border in one day. I placed the layers of crust, or frozen slabs of earth, as loose and open as old tiles for a barn, so that the frosty air and wind could pass and get through them, in and out, up and down, as long as the frost lasted; and made the border 6 inches or 8 inches higher than the old one, in order to allow for

the sinking of the thawed earth when the weather turned; and so it remained till the wind changed, and when it did we had the mildest and the slowest thaw, and the surest I ever remember to have seen or heard of. All that time and to this day that border has been on the sinking principle, and will sink still lower.

How it is to pay is a long story, but by the last days of January it was thawed to the depth of my steel fork, with which I dig all experimental borders, or about 9 inches or 10 inches deep with a good tilth dry surface. I then pressed down the whole surface with the head of a rake, and sowed seeds on it, to prove one of two opposite notions about the effects of cold on tender seeds. I had maintained that, which I often found out by chance, that no amount of cold in our climate will injure any sort of flower-seeds till they vegetate. Also, that no seed will ever vegetate for being sown in good ground, until the earth is warm enough, or to that degree at which the seed would sprout naturally; and others say if you sow seeds in cold soils, or in bad seasons, or before the sun warms the earth to the necessary degree, you do wrong and risk the seeds and seedlings. But I say, No, nothing of the sort. Every seed in London that does not want a hotbed, may be sown when the surface of the ground is so dry in the spring that raking or handling it does not hurt it, and my sinking-border will tell the same tale if I am right, and be as good for other experiments as I could wish it.

D. BEATON.

WARNING TO NURSERYMEN, FLORISTS, AND GENTLEMEN'S GARDENERS.

I BEG to forward the enclosed, hoping it may prove a warning to persons who visit private establishments and nurseries under the plea of looking around, but really with the intention of robbery.

Yesterday (Feb. 12th) at mid-day a very respectable young man in appearance, a native of Exeter, visited my establishment, and immediately commenced operations by pulling out of the store-pans large quantities of *Verbenas*, *Lobelias*, *Gazania splendens*, &c., secreting them in his hat and pockets. He was given into custody, and tried at Hammersmith before Mr. Ingham, and sentenced to pay £20, or three months hard labour.—CHARLES WOODROFFE, *Westbourne Nursery, Harrow Road*.

RIVERS' "ROSE AMATEUR'S GUIDE."*

WHEN the Nestor of Roses, the man who for thirty years and upwards has been engaged in their cultivation and management, comes forth to give us the results of his experience, we might naturally expect that there would be something worth reading and practical hints worth attending to; and so for a number of years this little book of Mr. Rivers has been considered the Rose-grower's vade mecum: inasmuch so, that it seems almost presumptuous in those with far less practical experience to apply the process of criticism to a work so well known and so universally recognised as the above. But we feel that when one speaks of criticism the term is hardly applicable; for so well has Mr. Rivers executed his task, so much common sense and clever lively writing are there in it, and so complete is the information he affords, that we feel that there is but little left for us to do than to direct attention to those portions of it which are new to this edition. The sixth having been published four years ago, there has been of necessity a considerable change—if in nothing else, at any rate in the varieties introduced; and while new ones have taken their place, old ones have been forgotten. But Mr. Rivers is not a man to stand still: and therefore it is not only in these particulars, but also in the methods of growth, that he has made the present edition an improvement on its predecessors. Thus hear what he says on the subject of decorated climbing Roses:—"A few years since a friend living at Waycliffe, near Guildford, found the heavily built brick bridge

leading over the railway to his house conspicuously ugly, and he wished it to be hidden by evergreen climbing plants. As the carriage road ran over the bridge, the gravel of which it was made did not seem to offer very happy quarters for any plant but Ivy, which was objected to as being too heavy. I then proposed planting it with varieties of *Rosa sempervirens*, or, as we ought always to call them, 'evergreen Roses.' They were with some difficulty planted, the gravel being loosened with the pick and some manure mixed with it. They grew with great rapidity, and soon covered every brick; but when they bloomed in large beautiful masses, some disappointment was expressed as to the monotony of colour. I was prepared for this, and told my friend they must be decorated. . . . This was done by putting in buds of various dark and rose-coloured Hybrid Perpetual Roses. He pays his annual visit in the following year, and is full of anxiety as to the result. 'What a glorious sight met my eye!' Amid the masses of flowers of the pale climbing Roses shone forth large clusters of the *Géant*, *Général Jacqueminot*, *Triomphe des Beaux Arts*, *Prince Noir*, *Comte Bobirsky*, *Louis Perronny*, *Colonel de Rougemont*, *Jules Margottin*, and others. The bridge was a fairy avenue, so charming was the effect."

He then gives full directions for carrying out similar plans in other places. Not less interesting is the portion of his book which treats of *pyramidal Hybrid Perpetuals*. Standard Roses, he says, must be condemned, and indeed the frost of this season has shown how little dependance is to be placed on them; and he therefore proposes to substitute for them pyramidal Hybrid Perpetuals. The plan for this he enters into at some length; but its main features consist in first budding two-year-old stocks of the *Manetti Rose*, with a preliminary budding of an old Hybrid China—*Madame Pisaroni*, one of a very vigorous and robust habit. "This is done in July and August: in May the buds will begin to shoot vigorously. If there are more shoots than one from each bud they must be removed, leaving only one, which in June should be supported with a slight stake, or the wind may displace it. By the end of August this shoot ought to be from five to six feet in height, and is then in a proper state for budding to form a pyramid. This is done by commencing to bud at about nine inches from the ground, and continuing it on the opposite side, and so on at equal distances up to about five feet. The terminal shoot must be cut off early in June of the following year; and in the course of a year or two magnificent pyramids may thus be formed, their stems completely covered with foliage, and far surpassing anything yet seen in *Rose culture*."

What a pleasant thing it is for us, who are somewhat of enthusiasts in gardening, to find that the man who could construct from one bone the entire skeleton of the *Dinornis*, or from one tooth be able to tell the whole history of an extinct *Pachyderm*, can descend to the unscientific though pleasant work of making the wilderness literally "blossom as the Rose;" for, for the idea of wilderness Roses Mr. Rivers says he is indebted to Professor Owen. In a rough, wild part of his ground, "large sewer-tubes, rejected on account of flaws in the enamel lining, were sunk vertically in the pure gravelly soil to within an inch or so of the surface, and filled in with loam and manure, and a Rose planted in the centre of each. The soil in the tube was kept free from weeds and the running grass, and other weeds outside were prevented making their way into such good quarters. To give the Roses extra vigour, some manure water was given to them occasionally in the summer. The effect of Roses growing in the highest state of luxuriance in a wilderness was most charming. The inside diameter of these tubes is 16 inches, their length 30 inches; so that they go below the roots of the weeds, which would otherwise devour the rich compost in which the Roses delight."

The opinion of one so thoroughly up in Roses as Mr. Rivers is recognised as of great value in deciding on all new varieties, though we do not believe him to be a veritable Pope, who can never make a mistake; for we have known Roses which he has spoken slightly of at last come out as of recognised value—but in the main he is seldom wrong: hence we felt anxious to see what he says of the newer varieties in dark crimsons. He says, and we believe truly, "Among this new group no variety can be more worthy of a note of praise than *Triomphe de Lyon*," which it seems is a seedling raised from that most beautiful Rose *Prince Léon*, which it resembles in the fulness and perfection of its flowers, with a colour like rich dark crimson velvet." But surely there must be some mistake in saying that *Empereur*

* *The Rose Amateur's Guide*, containing ample descriptions of all the leading varieties of Roses, regularly classed in their respective families, their history and mode of culture. By Thomas Rivers. Seventh Edition, enlarged, corrected, and improved. London: Longman, Green, Longman and Roberts. 1861.

de Maroc will make a *pillar Rose*: we have never seen it but very delicate in habit. While giving his modicum of praise to Trouillard, of Angers, and his seedlings, we hardly think justice is done to that grand Rose Eugène Appert: nor do we think it to be, as he implies, inferior to its parent Géant. We have, moreover, heard of (and indeed seen the stock of), one from the same raiser called Grégoire Bordillon, which in size, shape, colour, and vigour of habit, is believed to be a decided beat on its papa. Of Gloire de Santenay he says it is one of the finest Roses known. He also speaks a good deal of one for autumn blooming in this colour called l'Etoile du Nord. (By-the-by, there are two mistakes in reference to pages, in pages 102 and 103: page 97 is referred to in both instances, whereas it ought to be 111 and 208.) In rose-coloured varieties, Victor Verdier (not Verdin, as Mr. R. prints it), Madam Boll, Anna Alexieff, Belle de Bourg la Reine, and Anna de Diesbach are commended, and we believe correctly.

He commends in blush and flesh coloured varieties, Queen of Denmark and Mademoiselle Eugénie Verdier; and in whites, Virginal, Mademoiselle Bonnaire, and Princesse Impériale Clothilde: these are all Hybrid Perpetuals. Amongst Bourbons nothing new is noticed, though we believe that Victor Emanuel, Baron Gonella, and George Peabody are likely to prove acquisitions. And amongst Teas he selects, amongst new ones, Madame William, Souvenir d'Elise Vardon, Duc de Magenta, President, and La Boule d'Or as worthy of praise.

The subject of stocks is now occupying some attention. Mr. Rivers, as the introducer of the Manetti, is naturally anxious to say a word in its favour. For pot culture nothing, we believe, can exceed it; but there its merits stop. The Dog Rose he holds to be the best for standards, and Félicité Perpetuelle and Descartes to be good for dwarfs. The latter has proved very tender, and therefore of little use; and the Celine is so given to throw up suckers as to be very troublesome. We have seen a new stock, which we believe will prove to be a very hardy and valuable one, but cannot pronounce till we have seen more of it; but it has stood perfectly this winter, and is the most abundant rooter of any we have ever seen. Reine des Violettes, one of the new Roses, perfectly smooth and of vigorous habit, is likely by-and-by to be useful as a stock.

We have now a word to say to all Rose amateurs. If you have it not, this book is well worth your having: and to those who wish to try these new plans of growth to which we have adverted, we must refer for fuller particulars to the work itself. We think a few pages more might have been advantageously devoted to carrying out the notice on the title-page, giving full descriptions of leading varieties. Those, however, who wish for that will find it in Paul's "Rose Annual" for 1860-61.

SEA SLUGS AS A MANURE.

I SHALL feel much indebted to any correspondent to your valuable journal to give me some information about Sea Slugs (*Holothuria*) used as a manure. I should like to know by their experience how it acted, and whether it requires any fertiliser to be mixed with it before applying it to the ground, and what fertiliser would best go with it; and likewise in what proportions of each. In a distant country where guano is enormously dear, and often scarce, I imagined a cheap, rich manure might be made from these animals, where they abound in millions, and are in no way utilised. Would they with any combination of a cheaper nature than guano come up to this dear article for a *Sugar* crop? I shall feel truly grateful for any suggestions from any of your correspondents who may have tried them, or for any suggestions on this subject.—AN OLD SUBSCRIBER.

[There is no doubt entertainable upon this subject. Every kind of animal matter is a powerful manure. Sprats and every kind of fish are most effectual fertilisers; and we have known the Five-fingers (*Uraster rubens*), of which a drawing is published in our last volume, page 388, used extensively as a manure by farmers near the coast of Essex. These come the nearest to Sea Slugs of any animal fertiliser with which we are acquainted, and the Five-fingers proved very potent in promoting the growth of Wheat. This, as well as the *Sugar Cane*, belongs to one and the same Natural Order of plants, and this even without other information would incline us to conclude that Sea Slugs would be very useful as a manure to *Sugar* plantations. The best mode of applying them, we think, would be to spread them on the surface of the ground, and dig them in whilst fresh. We

had some experience of *Sugar* cultivation in the East Indies, and there a favourite manure with the natives at Dinajpore was the mud from tanks full of the remains of vegetables and animals. The salt in the Sea Slug would undoubtedly be useful to the *Sugar Cane*. We know that salt was so employed at Antigua, and Humboldt remarks that the *Sugar Cane* is one of the very few plants which endure equally well irrigation with fresh and salt water. If any of our readers possess relative information we shall be obliged by its being communicated to us.—EDS. C. G.]

NICE, ITS CLIMATE AND PLANTS.

NICE, FEBRUARY 6TH.—As this part of the Continent, being the winter resort of so many English families both for health and recreation, must always be a source of interest to some of your readers, and, perhaps, now more generally so since its annexation to France, a brief account of its climate and productions may be acceptable. During the present season it has been fuller than has ever been known, notwithstanding the number of elegant new houses lately built and still in course of erection. Foreigners from all quarters seem to flock into it, and the number of English alone now in Nice must be upwards of a thousand. This is not to be wondered at when the superior character of its climate above that of England is considered; for whilst the latter is subject to an almost continually damp and cold atmosphere during the winter months, Nice enjoys nearly always a dry, bracing air, with splendid blue sky and warm sunshine. The average external temperature in the shade for the month of November was 51°; December, 46°; January, 46½°. The greatest cold was experienced from the 18th to the 25th of December, which, in fact, constituted the only winter we have had. For three days there was a slight covering of snow on the ground, and frost in the valleys. The thermometer once descended 4° below the freezing-point. Since December 25th there has been hardly any rain, the roads are very dusty, and need the services of the water-cart daily. One remarkable difference between England and this place is, that whilst in the former our windows in the morning are mostly either covered with rime frost or running down with moisture, here even damp on the glass is hardly ever seen. In a bedroom to the south, inhabited by the writer, without fire the temperature has ranged from 52° (the lowest point) to 64°. Fires in sitting-rooms are but occasionally used. In the sun the thermometer rises to about 118°.

As to *Floriculture*, generally speaking it is not good. Nature seems to do so much that man becomes careless, and the gardens are for the most part very untidily kept. The neatness of the English in this respect might be imitated with advantage. A good, well-kept greenhouse is hardly known. Frequently they have, like the Irishman's hat, a great many holes in the upper part. Reed mats are mostly used for the protection (and only needed for a short time) of such tender things as *Heliotropes*, young *Orange* trees, &c. *Verbenas*, *Scarlet Geraniums*, *Ageratums*, *Mignonette*, *Stocks*, &c., bloom throughout the winter. In a garden on the slope of a hill near the port, belonging to an Englishman, Mr. Stuart, there are about 5000 *Pelargoniums* in a most healthy shrubby condition, nearly all in the open air, with slight protection when the nights are cold. About 500 older plants are already turned out into the border. This gentleman devotes great attention to the raising of *Pelargoniums*, and has a large number of seedlings which will bloom this season, and also of young *Scarlet Geraniums*. The principal plants in blossom in the open air during the winter, have been *Habrothamnus elegans* (often 6 feet high, with showy dark red flowers, something like a *Fuchsia*); *Cassia tomentosa* (about the same height, large yellow blossoms); *Bignonia capensis* (a showy climber with striking, upright, scarlet flowers); *Hexacentris coccinea* (also a climber with drooping red flowers); *Justicia adhatoda* (a fine dark green shrub, with spikes of yellowish-white lipped blossoms); *Sparmannia africana* (a noble large-leaved plant often 10 feet high, with numerous white flowers, of which there are specimen plants in the Sydenham Crystal Palace). Various sorts of *Salvias* have been and still continue very gay in the gardens, including *S. involucrata* (very large pink blossoms); *S. fulgens*, *S. splendens*, *S. tomentosa*, and others. And I must not forget the *Roses*, which are here really perpetual and very fine, amongst which the *Souvenir de Malmaison* is conspicuous. There are long hedges of *China*

Roses which are trimmed in with shears as our Quick hedges. They are now making fresh shoots, and with the numerous rampant Banksian kinds will soon be in full flower.

As to *Horticulture*. The markets are well supplied with vegetables, Greens of all sorts, Turnips, Radishes, Salsafy, Broccoli (now very plentiful), Artichokes, Celery, Lettuces, and also new Potatoes from the open ground. Oranges abundant, and now ripe, are sold at 2d. a dozen. One tree alone is computed to have 2000 upon it. It is usual to sell the fruit on the tree, so that the purchaser can pick it at pleasure. The numerous walks through the Orange gardens, many of them open to the public, are delightful.

As to *Wild Flowers*. As the spring is now rapidly advancing they are becoming very numerous, amongst them may be mentioned the single blue Hepatica (triloba), Anemone (pink, blue and scarlet), hortensis, cyana, coronaria, &c., Narcissus (of various sorts), and the pretty Crocus meridionalis, which is plentiful on the mountains, with the large showy Almond (*Amygdalus communis grandiflora rosea*).—EDWARD COPLAND, 21, *Promenade des Anglais, Nice*.

THE LITTLE MARKET-GARDENER;

OR,

HOW TO CULTIVATE AN ACRE OF LAND WHEN PROFIT IS THE CHIEF AIM, AND SHOWING HOW A FAMILY MAY BE SUPPORTED AND SOMETHING PUT BY FOR A RAINY DAY.

(Continued from page 286.)

CABBAGES.

As soon as you have finished planting the Gooseberry and Currant bushes, mark out six rods of the lowest and stiffest part of the garden, if the soil be sandy or gravelly; but if the soil be clayey, almost any part of the garden will do for Cabbages. Have three tons of good manure dug in deep and well; then look out for some good-sized and good-rooted plants. I have read about market-gardeners planting them 1 foot from row to row and 9 inches from each other in the row, and cutting every other row, and every other plant in the remaining row, for what they call Coleworts. Those that were left would then be 2 feet from row to row and 18 inches from each other in the row, to grow for the main crop of Cabbages.

These Coleworts may, perhaps, sell well about London or other large towns, but they will not pay me to plant them in that way. In the first place I cannot sell them at all, and in the next place I can mostly sell the plants at 2d. per score; and besides, if I could sell them well, I would sooner cut them all, and plant a crop of something else on the land; for I never found those that were left do so well as those that were planted the right distance at first. I used to plant mine 2 feet from row to row and 18 inches from each other in the row; but I have a new-fashioned way of planting them now, which makes the old way look very silly. I plant them 17½ inches from row to row and 20 inches from each other in the row, so that they are exactly 20 inches from each other every way; and in the same way I plant everything else that is planted in continued rows, unless it be the Potatoes—at least, everything that is called a plant or a tree.

To know the right distance from row to row according to the distance from plant to plant (if you intend to plant in this way), you must fix upon the distance from plant to plant; then divide that distance into four parts, then three of those parts and a half will be the right distance from row to row. For instance: If I were going to plant an orchard, and was ordered to plant the trees 8 yards apart, I should plant them 8 yards from tree to tree and 7 yards from row to row, they would then stand exactly 8 yards from each other every way. Of course you must understand they are to be planted in triangular, or quincunx order, thus—• • • • •

You will find upon calculation that by planting Cabbages in the old way one rod will hold sixteen dozen—namely, twelve rows, and sixteen in each row. By the new way you will find that a rod will hold eighteen dozen and a half—namely, sixteen rows, and fourteen in each row.

I always reckon to sell my Cabbages one-half at 1d. each, and the other half at two for 1½d., and I always try to get most of them sold before the young Potatoes are ready.

EARLY PEAS.

As soon as you have planted your Cabbages it will be time to think about the Peas. Mark out six rods of land, I do not care what sort it is; dig three tons of good rotten manure into that space deep and well, and you need not fear but you will have a crop of Peas if you will plant the right sort at the right time, and plant them where they can have plenty of fresh air. I know I shall catch it for saying this; but I do not care if I do, my advice is to market-gardeners, not to gentlemen's gardeners.

If you have plenty of sticks without buying, you may plant them 4 feet from row to row; but if you have no sticks without buying, trench them in like Potatoes, only do not put them in quite so deep, and let them be 18 inches from row to row, and be sure you do not have the land dug until you are quite ready to sow the Peas. I sow mine as I go on, so that I never tread upon the land, whether it be light or stiff land, after it is dug.

The best early Pea that I have grown for market is the *Emperor*. There may be better Peas, but I have not grown them.

I always reckon to sell my first gathering of Peas at 2s. per peck. In looking over my books I find that I began in 1859, June 21st, and in 1860, June 30th.

RADISHES.

Now mark out one rod and a half of your very best land that will do to prick out Celery upon. Never mind about its being in the shade. It will be best in an open place. Never mind putting any manure upon it. I never saw manure that was put upon the land at the time Radishes were sown do any good for them. Dig the soil deep and well; mark it out into three-feet-six-inches-wide beds, and sow the seed as soon as ever the land is dug, either broadcast or in drills; which you like. If you wet the seed, and sprinkle a little red lead among it there will not be half so much danger of the birds taking it. The best sort that I have grown for market is the *Scarlet Short-topped*.

I always sell my first week's drawing at 1½d. per dozen Radishes—that is, eight Radishes in a bunch at 1d. per bunch.

I find that I began to draw Radishes in 1859, April 27th, and in 1860, May 5th.

LETTUCES.

It will be time now to sow about one rod of Lettuce. You must not pick out a nice warm border for it, I cannot spare these warm borders for Lettuce, I shall want them for a better purpose shortly; neither must you sow them on gravelly banks. Land that will grow good Cabbages will grow good Lettuces. Put on a heavy dressing of good rotten manure, dig it in deep and well; mark the plot out into three-feet-six-inches-wide beds; mark four rows upon each bed for the Lettuce, and you may then sow a row of Radishes between each two rows, and one row of Radishes up each outside. You will then have four rows of Lettuces upon each bed, and five rows of Radishes.

I cannot sell any Lettuces so well as the *Malta Cabbage Lettuce*. I have sold these at 1d. each. You may try a few *Cos*, as, perhaps, you may meet with a customer or two that would rather have them.—THOS. JONES.

(To be continued.)

[Send us your full and right direction. We have had a letter returned.—EDS. C. G.]

FRUIT TREES IN THE FAR WEST.—Oregon Apples and Pears are in great demand at San Francisco, because they keep better the farther north they are grown. The Americans are an Apple-loving people, and their consumption of them is astonishing. The British colonies are too far north to compete with the vineyards of Los Angeles, or the Peaches of Obispo; but they may reasonably expect to assist Washington and Oregon in supplying the south with English fruits. Orchards in the colonies will be very remunerative. Those in Oregon have the disadvantage of being situated in the centre of the state, and fruit has to be carried to the Willamette River, and thence by steamers from Portland. An acre of land planted with two hundred Apple trees would, at the end of three years, on a minute calculation, cost a proprietor £30 or £40; and the lowest selling price on the coast of an acre of Apple trees of that age is £200. The intermediate trees are chopped out with an axe as the orchard becomes too crowded.—(Facts and Figures relating to Vancouver Island.)

THE TREDESCANTS.

JOHN TREDESCANT THE YOUNGER.

IN our last volume, page 344, we gave a biography of the elder TreDESCANT, concluding with a promise to publish a similar memoir of his son, a promise which we now fulfil.

The date and place of his birth were but recently discovered, and their discovery was preceded and attended by a trail of facts which may enable our readers to appreciate the interest and pleasure antiquaries derive from their pursuits. Searching after the unknown, unravelling the intricate, and establishing the uncertain, constitute the most enjoyable of employments. In 1851, when attention was re-aroused to the TreDESCANTS, and the greatest uncertainty existed as to their national derivation, the following anonymous note was published:—

"A few days since, in looking into a copy of Dr. Ducarel's tract on the subject, preserved among the books in the Ashmolean Museum, I found the following note in pencil, not very legibly written in the margin of the tract, where Dr. Ducarel says he has not been able to find any account in the Lambeth Register of the death of the elder Tradescant. 'Consult (with certainty of finding information concerning the Tradescants) the Registers of —apham, Kent.' Since this note was written, the tract has been bound and the commencement of several words cut off. Amongst them is the name of the place of which the registers are to be consulted. I imagine it to be *Meapham* (*apham* is all that can be read").—(*Notes and Queries*, iii., 469.)

It was not until after the lapse of nearly twelve months that this hint proved fruitful; but the delay had arisen from no fault of the pursuer, for the editor of the truly useful periodical we have quoted writes as follows:—

"At the close of last year [1851] we received a communication from a learned and much valued friend, now, alas! no more [Rev. Lancelot Sharpe], telling us that *Meopham* was the place referred to, and suggesting that we should get extracts from the register for the information of our readers.

Upon this hint we acted; but our endeavours, for reasons to which we need not more particularly refer, failed; and it was not until our attention was recalled to the subject by the endeavour that is making, and we trust successfully making, to procure subscriptions for restoring the Tradescant Monument at Lambeth, that we applied to another friend resident in the neighbourhood of *Meopham* for his assistance in the business. That assistance was (as it has ever been) rendered most cheerfully and most effectually; and we are now enabled to lay before our readers and the Committee of the Tradescant Monument Restoration Fund, the following evidence that John Tradescant the younger was a Man of Kent. It is extracted from the baptismal register of *Meopham*.

"1608 August the iiij daye John the sonne of John Tradescant was baptized eodem die"—(*Ibid.*, v., 266.)

Concerning the earlier portion of his life we have no information. At one time we entertained the opinion that he had travelled in America, but a further consideration of the authorities inclines us to conclude that we were mistaken. Whether he was as well skilled as his father in a knowledge of plants is open to doubt; for though Parkinson often refers to the elder Tradescant, both when living and subsequently to his death, yet we do not remember to have met with one instance in which he alludes to the junior Tradescant. This silence, and his intimacy with Ashmole, lead to the conclusion that, although fond of plants and styling himself "gardener," yet that his museum and antiquities afforded to him a more congenial pursuit.

The next certainty that we arrive at is Tradescant's marriage, concerning which there is this entry in the Register of St. Nicholas Cole Abbey, in the city of London.

"1638. *Marriages*.—John Tradescant of Lambeth, co. Surrey, and Hester Pooks of St. Bride's, London, maiden, married, by licence from Mr. Cooke, Oct. 1."

"This lady erected the original monument in Lambeth churchyard upon the death of her husband in 1662. She died 1678."—(*Ibid.*, viii., 513.)

The issue of the marriage, so far as we have any records, were one daughter and one son. The daughter, Frances, married a Mr. Norman, and we know nothing more of her than will be found mentioned in her father's will.

The son, an only one, died in 1652, and his loss was paralyzing to his father. The latter published the catalogue entitled *Musæum Tradescantianum* in 1656, and in the preface he states—

"About three years agoe (by the perswasion of some friends) I was resolved to take a catalogue of those rarities and curiosities, which my father had sedulously collected, and myselfe with continued diligence have augmented and hitherto preserved together."

He then proceeds to account for the delay in the publication of the work in these words:

"Presently thereupon my

only son died, one of my friends fell sick,' &c.

"Again, in Ashmole's *Diary* we find the following entry:

"Sept. 11th, 1652. Young John Tradescant died."

"And, further on, Ashmole states that

"He was buried by his grandfather, in Lambeth Churchyard."

The word *by*, in the quotation, meaning, *by the side of*, close by his grandfather. The burial register of Lambeth parish gives the date of the interment, Sept. 16, 1652."

The father survived the son about nine years, and we are indebted to Dr. Hamel for discovering and publishing his will as follows:—

"THE LAST WILL AND TESTAMENT OF ME JOHN TREDESCANT.

"In the name of God, Amen.

"The fourth day of April in the yeare of our Lord God one



Iohannes Tradescantus Filius. genij ingenijq;
paterni verus heres. relictum sibi rerum vndiq;
congestarum thesaurum ipse plurimum adauxit
et in Museo Lambethiano amicis visendum exhibet.

W. Hollar. sc.

thousand six hundred sixtie-one, I, John Tredecant of South Lambeth in the Countie of Surrey, Gardiner, being at this present of perfect health, minde, and memorie, thanks be therfore given to Almighty God, and calling to minde the uncertaintie of death, and being desirous whilst I am in a Capacity to settle and dispose of such things as God of his goodnesse hath bestowed upon me, doe make and declare this my last Will and Testament as followeth. First and principally I commend and yield my soule into the hands of Almighty God my Creator, and my bodie to the Earth to be decently (according to the quality wherein I have liued) interred as neere as can be to my late deceased Father John Tredecant, and my sonne who lye buried in the parish Churchyard of Lambeth aforesaid, at the discretion of my Executrix hereafter named; hoping by and through the merits, death, and passion of my onely Saviour and Redeemer Jesus Christ to have full remission of all my Sinnes, and to see my God in the Land of the Living; and for my temporall Estate I doe will, bequeath, and dispose thereof as followeth. That is to saie, I will that all such debts as shall be by me justly due and owing to anie person or persons whatsoever at the time of my decease (if anie such be) shall be truly paid and satisfied, and after my Funeral charges shall be defrayed, for the doeing whereof I appoint the summe of twenty pounds or thereabouts shall be expended by my Executrix but not more. Item, I giue and bequeath upon the condition hereafter mentioned to my daughter Frances Norman the summe of ten pounds of Lawfull money of England, which I will shall be paid unto her within six moneths after my decease, and likewise I do forgive her the sum of fourscore pounds or thereabouts, Principall Money, besides the Interest thereof which I long since lent her late deceased husband Alexander Norman. Provided that shee and her husband, if she shall be then againe married, give my Executrix a generall release for the same. Item, I give and bequeath to my two namesakes Robert Tredecant and Thomas Tredecant, of Walberswick in the Countie of Suffolk, to eache of them the summe of five shillings apiece in remembrance of my loue, and to every childe or children of them the [said] Robert and Thomas that shall be living at the time of my decease the summe of two shillings and sixpence apiece. Item, I giue to Mrs. Marie Edmonds, the daughter of my louing Friend Edward Harper, the summe of one hundred pounds, to be paid unto her after my wife's decease; and in case she die before my said wife, my will is and I doe hereby giue and bequeath the said summe of one hundred pounds, after my wife's decease, to my Foure Godchildren, vizt. Hester, John, Leonard, and Elizabeth Edmonds, sonnes and daughters of the said Mrs. Mary Edmonds Equally to be diuided amongst them, share and share alike; and if either of them die before he, her, or they receiue their share or portion so to be diuided, then the said share or portion of him, her, or them so dying to goe and be giuen to the survivor and survivors of them, share and share alike. Item, I doe hereby giue, will, devise and bequeath to my Cosin Katharine King, widdow, after the decease of my wife, the Little House commonly called the Welshmans house situate in South Lambeth aforesaid, together with that Little Piece of Ground now enclosed thereunto adjoyning; and to her heirs and assignes for euer. Item, I giue, devise, and bequeath my Closet of Rarities to my dearly beloued wife Hester Tredecant during her naturall Life, and after her decease I giue and bequeath the same to the Universities of Oxford or Cambridge, to which of them shee shall think fitt at her decease. As for such other of my friends and kindred as I should nominate for Rings and small tokens of my Loue, I leaue that to the Care of my said wife to bestow how manie and to whome shee shall think deseruing. The rest and Residue of all my Estate Reall and personall whatsoever, I wholly giue, devise, and bequeath to my deare and louing wife Hester Tredecant, and to her heires and assignes for euer. And I do hereby nominate, ordaine, constitute, and appoint my said Louing Wife Hester Tredecant full and sole Executrix of this my last will and Testament; and I doe desire Dr. Nurse and Mr. Mark Cottle to be Ouerseers of this my last Will and Testament, and I giue to each of them fortie shillings apiece. Lastly, I do hereby revoke all Wills by me formerly made, and will that this onely shall stand and be my last will and Testament, and no other. In Wittnesse whereof I the said John Tredecant to this my present last will and testmant haue set my hand and seale the daie and yeare aboue written.

“JOHN TRE (L.S.) DESCANT.

“Signed, sealed, published, and declared by the said John Tredecant the Testator, as and for his last Will and Testa-

ment, in the presence of John Scatewell, Foulk Bignall, Robert Thompson, Junris, Ric. Newcourt, Junr, Richard Hoare, Notary Publique.

“Probatum apud London coram venerabili viro Dño Williamo Mericke milite Legum Doctore Commissario, etc., quinto die mensis May Anno Domini 1662, iuramento Hestore Tredecant, Relicte dicti defuncti et Executricis, etc.”—(*Ibid.*, v., 367.)

(To be continued.)

KIDD'S HOT-AIR SYSTEM.

I HAVE read with much interest your articles on the improved method of heating by-hot air, and intend to try it.

I have a greenhouse heated on the old Polmaise principle. The furnace is of ample dimensions; covered with fire-tiles, and built in the manner recommended by Mr. Beaton—enclosed on three sides by detached walls, with a hot-air chamber over the whole.

It appears to me that I have nothing to do but to close the present communication with the cold-air flue from the greenhouse, and to place the ventilators on each side of the furnace, and to make an opening in the ash-pit, as suggested by Mr. Beaton, to set the apparatus at work on the new principle, as my chief cause of complaint hitherto has been a waste of heat. I propose to adopt his other suggestion, and to carry the furnace flue (by means of iron or earthenware pipes), through the hot-air chamber. But I have some theoretical apprehensions as to the effect of the communication with the ash-pit.

Will Mr. Beaton have the kindness to say whether there is not some danger, that the air passing through the ash-pit over hot cinders and ashes dropping from a coke or coal fire, will carry with it a noxious gas, injurious and even destructive to plants? Also, whether the fire will not attract to itself from the ash-pit, by means of the opening into the hot-air chamber, a constant supply of air, and thus destroy the command over the supply intended to be obtained by the ash-pit door and the valve in it usually recommended?—A SUBSCRIBER FROM THE BEGINNING.

[Your furnace is the best constructed of all on the Polmaise system that we recollect to have read of, and you will have little difficulty in turning over the Polmaise to the Kiddean system, although the two are just as different as the day is from the night; but as your Polmaise is perfect so far, what we would advise you to try first would be to unite the two systems, and then ascertain accurately what extra power the Kiddean will give to Polmaise. The next step should be to stop Polmaise, and work the Kiddean only, and see also if that is an advantage in requiring less waste of fuel, and pray let us know the result. Such an experiment as you can prove sufficiently for our purpose, without costing you anything, is just what we have been looking out for since this turn of the hot air has blown our way. With a properly constructed air-chamber, such as you possess, we would prefer Polmaise before an old flue in the country for a greenhouse. But the best Polmaise must necessarily burn more fuel for the same amount of work than the Kiddean, because a stronger fire is needed to get the back air, or cooled air, from the greenhouse—the very point on which Polmaise failed, and for which it has been given up by the public. Now, that the Polmaise circuit of air is fully and fairly proved not to have been necessary, much less fuel would need, seemingly, to be used; and the less quantity of fuel used, the better the air will be on reaching the plants. But in building a new furnace for the Kiddean system, we would place it lower and much farther from the greenhouse than would be necessary for Polmaise, for two reasons: for a better draught, and for qualifying the air, or cooling it more before entering the greenhouse. In our own case we shall be under the necessity of keeping the furnace almost on a level with our pit; and to get a sufficiently quick draught, we have been considering whether one run of a four-inch glazed earthenware pipe would not be the best means for that end, to place it close to the front wall, and to rise one length of pipe with an elbow-turn at the farthest end, to make the joints of common mortar, and to leave a small space in each mortar-joint for the escape of part of the onward current. Long pits could certainly be heated cheaper by such means than by any other, and more especially on the level; and who knows but the cheapest and best way of all the plans hitherto tried to heat greenhouses, would be to use one row of these glazed earthenware pipes along the front of the greenhouse instead of a flue

and to let off part of the heat at every second or third joint? or if the draught was too quick for allowing of escape at such joints, the mouth of the pipe at the farthest end might be partly closed till the escape at all the openings was established. With respect to your ash-pit and our own, we prefer a small opening on each side of the fireplace in front, and ease the whole furnace within some good non-conducting medium, so as to lose as little heat as possible from any part of the apparatus.—D. B.]

HEAT DECLINED IN A MUSHROOM-BED.

THE cultivation of the Mushroom having become almost universal to the gardener as well as the amateur, I may venture to ask a little assistance in the following almost hopeless case. Wishing to put up rather a largish bed on or about the 20th of January, to my surprise the dung got under cover three weeks previously has proved too far decomposed. Having spawned the bed on the 28th, at all risk of a crop, I find that the heat is now (the 6th of February) quite gone. It will, under those unforeseen difficulties, be most acceptable to have the opinion of some more successful cultivator, through your columns, to know what is to be done. I think I hear some one say, "Why, of course, make another bed." That is all right where the means of labour and expense are not thought of, but I must try for a crop: it is economy that is wanted here, and crops besides. I may mention that the Mushroom-house alluded to is simply a back shed with a flue on one side, the bed is on the floor 15 feet long, 5 feet wide, and tapers up to a round crown about 2 feet high. —ALPHA.

[We should desire nothing better for a Mushroom-house than such a shed as you mention with a flue on one side. We presume that the bed is in the middle, as it rounds off in the middle. It would have been as easily managed if built flat, or with a slope from back to front. The easiest mode to set the spawn working, will be to throw some long litter together until it heats a little, and then cover your bed with it from six to nine inches deep, until you find the surface of the bed as warm as new milk, when you can reduce the covering. In cold weather put a little heat in your flue besides. If this is inconvenient, heat the shed to 65° or 70° by the flue until you perceive the Mushrooms coming, and then gradually reduce the heat to from 55° to 60°. By either of these modes you will succeed, if the spawn is still sound and the materials are all right. If the spawn is gone, turn the bed over, and add a few bushels of fresh material and spawn again.]

THE CONNECTION OF THE SCIENCES.

ASTRONOMY, MAGNETISM, METEOROLOGY, AND THE CULTIVATION OF THE SOIL.

WE have discovered that electrical undulations are established upon the surface of the earth by the action of the solar rays, and that they circulate from east to west, varying in their intensity, with the varying position of the sun, relatively to the place of observation.

That fine old Swedish philosopher, Oersted, proved the connection of magnetism and ordinary current electricity, and demonstrated that all magnetic phenomena take place at right angles to such electrical paths. Thus we know now that the magnet (the compass-needle) points to the north and south, because the electrical circulation is from the east to the west; magnetism and electricity being always at right angles to each other. There is a continual variation in the *force* or *intensity* of the earth's magnetism; these variations—hourly, daily, monthly, and yearly—observing a certain degree of regularity, and exhibiting a peculiar dependence upon the relative positions of the earth and sun.

Since every variation in the magnetic force of the earth produces some disturbance in the magnetic needle, it was important to determine with exactness the laws by which these variations were regulated. As the commerce of the world is materially concerned in the perfect appreciation of all that affects the mariner's compass, the great nations of Europe and America combined to establish magnetic observatories in all parts of the globe.

Some mighty and mysterious power influences the earth's electricity, and this is made known to man by the tremor of a magnetised bar. The intelligent observer solicits Nature to reveal the secret of this; and after long and patient prayerful

working, an answer is given—that answer telling us that the phenomena of magnetism, as manifested on this planet, is the continuation of a development of physical force, dependant upon changes in the form of matter which occur in the sun.

The sun's brightness depends upon a gaseous self-luminous envelope—to which Arago gave the name of the *Photosphere*. This envelope is subject to peculiar disturbances, which are indicated to us by the formation of dark spots. These spots have been the subjects of observation since 1612, when Galileo made some important observations on them. Sir William Herschel, in 1801, published a remarkable paper on these spots, and endeavoured to show that there was some connection between the number of spots seen in any given year on the sun's disc, *with the price of corn in the English markets*. But Hofrath Schwabe, of Dessau, has given us the most reliable information respecting these spots. During the long space of thirty years he has often examined the sun's disc for upwards of 300 days in each year. The tables which Schwabe has published leave no room to doubt that the solar spots occur in cycles of about ten years; the smallest number seen in any one year being thirty-three, the largest number being 333. Five years are expended in advancing from the minimum to the maximum number, and five years again descending to the minimum.

Schwabe writes:—"I do not believe that the spots on the sun have an influence on the temperature of the year;" but he could examine only the results of a limited area. The enlarged observations of Dove, who was supplied with returns from every part of the world, go to show that there is a connection between the variations of the mean annual temperature of the whole earth and the production of solar spots. We have not, however, now to deal with heat, but magnetism. All the observations made at the magnetic observatories of the world are returned to General Sabine, and carefully reduced, by a staff of engineers, under his direction, at Woolwich. The result of the most careful examination has been the announcement of the astounding fact—that the periodical inequality of the earth's magnetic force has its opposite phases of maximum and minimum separated by an interval of five years, of which the cycle may be conceived to include about ten of our solar years.

The regularity with which the alternations of increase and decrease have been traced by Schwabe, in his observations of the solar spots, is found to occur in the earth's magnetism. "The coincidence," says General Sabine, "as far as we are yet able to discover, is absolute; the duration of the period is the same, and the epochs of maximum and minimum fall in both cases in the same years."

The periodicity of cold winters is a subject which has attracted the attention of M. E. Renou. He fancies that he has discovered that they return in groups of five or six, in a cycle of about forty-one years, alternating with corresponding groups of mild winters. He brings forward a large number of observations of the temperatures of different months, ranging from about 1700 to the present year, in support of his proposition, and ascribes the singular period of recurrence to the same cause which governs the period of maxima and minima of solar spots. He calculates that we are now in the period of severe winters—the present one has been very severe. A warm summer never follows a very cold winter, and from that and other considerations he concludes that the summer of 1861 will not be a very fine one. It will not be quite so cold as the last, but will be at least 2° below the average mean temperature of summer. M. Renou classifies summers according to their temperature in the following way:—A mean temperature of 68½° Fahrenheit he calls "very warm;" one of 67° is "good;" 65° is "mean." Below this temperature come the bad summers, 63° being "bad," 61½° "very cold," and 59½° "exceptional;" which latter temperature has only been reached in the winter of 1816. We may therefore expect that next summer may have an average temperature of 63°, and will, consequently, be classed amongst the "bad." The month of May, whose mean temperature varies from 55° to 59°, is this year to be 57°.—(*The London Review*.)

ROYAL HORTICULTURAL SOCIETY.

FRUIT COMMITTEE.—A Meeting of the Fruit Committee was held in the new Hall of the Society at Kensington Gore, on Tuesday the 12th inst., Mr. Edmonds in the chair. The following presentations to the Garden were announced:—

H. Pownall, Esq., F.R.H.S.—Seeds of Ajaco, or Waran, the

root of which is the chief food of the natives of Champion Bay, Western Australia.

Capt. Trevor Clarke, F.R.H.S.—Three sorts of hybridised Strawberries.

Mr. Whiting, the Deepdene.—Black Damascus and Money's West's St. Peter's Grapes.

Mr. John Spencer, F.R.H.S.—Three plants and cuttings of Bowood Muscat.

Mr. W. Barnes, F.R.H.S.—Plant of Barnes' Muscat Grape.

Mr. A. Crambe, Tortworth Park.—Cuttings of Passe Muscat Grape.

Mr. Drewett.—Denbies' plant of Muscat of Alexandria, and cuttings of Denbies' Trebbiano.

Mr. Newton, East Lodge, Enfield Chase.—Plant of Money's Muscat Eschallota.

The reports given in by the Sub-Committee appointed at last Meeting to examine Melville's sprouting Cabbage when cooked being conflicting, it was requested that an application be made to Mr. Melville for a second supply, and a second examination be made.

A large collection of Apples was sent from Guernsey by S. Whitchurch, Esq., as illustrating the varieties grown in the island. The collection was an interesting one, and a Sub-Committee was appointed to examine and compare them with the varieties in the fruit-room at the Garden. There was also a very excellent collection of sorts from the fruit-room of the Society, among which the most noteworthy were:—Colville blanche from a pot in the orchard-house, very tender flesh and very fine flavour; Pomme Roi, very delicate flesh, fine flavour, and fine aroma; Court of Wick, Ribston Pippin, Brickley Seedling, Dutch Mignonne, and some other dessert sorts, were past and were inferior in flavour; Pomme Violette, very firm, crisp, juicy, and briskly acid, excellent for kitchen use; as were also Mère de Ménage and Gros Cœur. Two very nice dishes of the Burr Knot were exhibited by Mr. William Paul, of Waltham Cross.

The following seedling Apples were exhibited:—From Mr. William Paul, a small round Apple, very acid, and evidently only fit for cooking, but too small for a kitchen Apple. From Mr. Weaver, Belhus Park, near Romford, a large conical and handsome Apple, with a tender flesh and brisk acidity, was ordered to be cooked and the report to be submitted at next Meeting. From Mr. Booth, Arley Park, Northwich, a seedling dessert Apple of the smallest size, round, and with a red cheek, called Arley Apple, was evidently past its best, and therefore was not in a condition to be reported on.

A fine collection of late Grapes was sent from the Garden. They were grown in the great vinery, and were allowed to hang on the Vines till about a fortnight ago, when they were cut and placed in the fruit-room. All of them were considerably shrivelled, except Barbarossa which was quite plump. The other varieties were—Burchardt's Prince, rich, brisk, and vinous; Catalanesia vera, thick-skinned, richly flavoured; Oldaker's St. Peter's, tender flesh, thin skin, rich and vinous; Prune de Herault, not remarkable. Morocco Prince, rich and vinous, excellent; Cellade précoce, good, not remarkable; Blussard Noir, good, not remarkable; Gros Panse, worthless; Malaga, worthless; Raisin de Calabre, juicy and sweet, but not rich; Verdall, very sweet, rich, and vinous; Muscat of Alexandria, very fine.

Mr. Booth, of Arley Park, sent good bunches of Muscat of Alexandria, which had hung well and had almost become raisins. Mr. Mobbs, gardener to W. B. Praed, Esq., Tyringham, Newport Pagnell, sent some nice little bunches of well-coloured early Grapes grown in pots—among which we observed Golden Hamburgh, Muscat Hamburgh, Trentham Black, and several other sorts.

Mr. Newton, of Enfield Chase, again exhibited good stalks of Baldry's Defiance Rhubarb; and Mr. Melville, of Dalmeny Park, near Edinburgh, sent specimens of his Fearnought Cabbage, and also of the Heading Scotch Kale, which were referred to a Sub-Committee to be cooked and reported upon.

FLORAL COMMITTEE.—The first Meeting in the new room at Kensington Gore was held on Tuesday, the 12th. It was hardly to be expected that at this season, and with such a time as we have had, there would be much to interest: consequently nothing of any novelty was brought forward for the decision of the Committee. A collection of hardy shrubs was contributed by Mr. Noble, of Bagshot (who seems to have suffered very severely), showing the effect of the winter frost. Amongst them were Laurustinus, Araucaria imbricata, Phillyrea angustifolia,

&c.; while plants of Berberis japonica and Skimmia japonica were shown perfectly uninjured. The former, and its allied species intermedia and Bealii, will doubtless be in great demand; for not only are they perfectly hardy, but their foliage, flowers, and fruit are deeply interesting.

Messrs. E. G. Henderson & Son sent in a collection of miscellaneous plants, among which were some nice varieties of Cyclamen persicum—very pleasing additions at this time to the conservatory; some of them, moreover, being sweet-scented.

The room is doubtless a vast improvement on its predecessor in St. Martin's Place, and when warmer will be a comfortable place for meeting.

Reports on the Scarlet and other bedding Geraniums, and on Gloxinias, were read by Mr. Moore, and the thanks of the Committee tendered to him for the great care and trouble bestowed on them.—D.

TRADE LISTS RECEIVED.

Wheeler's Little Book, or Select Seed List. Gloucester, 1861.—This is a "little book" with a great deal in it: and, though a trade list, contains much useful information both descriptive and cultural.

Catalogue of English and Foreign Novelties, Cultivated for Sale by John Salter, F.R.H.S., Hammersmith.—This list teems with novelties in the way of Chrysanthemums, for the growth of which Mr. Salter is so celebrated; besides Dahlias, Daisies, Phloxes, Fuchsias, Heliotropes, and all the best kinds of Florists' Flowers.

TO CORRESPONDENTS.

VARIOUS (*E. N. N.*).—Pot at once seedlings of Mimulus and Virginian Stock. Do not remove live Ivy leaves until the first week in May. You may dress your Roses now with Gishurst Compound. The number of sets from a bushel of Potatoes depends upon the size of the tubers.

ERYNGIUM MARITIMUM (*M. C. D.*).—The leaves and flower-stalk you have sent leave no doubt upon our minds as to the plant being the *E. maritimum*.

CENTRE FLOWER-BED (*A Regular Cockney*).—You plan will not do. Roses must come after the Pampas Grass, and the Tom Thumbs the lowest or the outside ones; but it is not good to train down common Roses, only the very free Chinas. The Malmaison Rose, Souvenir de la Malmaison, in one row behind, and the Géant des Batailles in another row in front of it, are the two best for you, and will stand the most training. The lanky trees from the nursery want time, patience, and good culture, and you may depend upon it they will shade and shelter you in time.

VINERY AND CUCUMBER-PIT HEATED BY ONE FLUE (*A Subscriber*).—We have no doubt your plan will answer if well managed, the dampers will stop the draught as you propose. If you could manage to raise your Cucumber-bed and bring it in a line with the house, it would be better; for by training your Cucumbers and Melons under the roof, and walking inside and looking up at them, you would have far more pleasure than you could have in a common pit or frame, where you must stoop to do everything to them. You will understand that your Cucumber or Melon-house will just look like the grapery, only be divided by a division. In either case, if the flue is raised, one of the ends at least should be exposed, and supplied with evaporating-pans, and that will give you top heat. You might also, if disposed, put one of Rivers' small boilers on the top of your furnace. We have no doubt about your plan answering with a little care. We have grown lots of Grapes, Melons, and Cucumbers in the same house, but the Melon and Cucumber plants were raised in a bed and brought into the house, when its night temperature averaged 65°, and then we removed them shortly after the Grapes were ripe, that they might have air enough to keep them sound. Earthenware would do for the chimney, and so would a pipe of metal six inches in diameter. After passing the Cucumber place all the rest of your flue might be strong drain tiles six inches to nine inches in diameter, the joints being made of Portland cement or common mortar. The chimney would be best a foot or so above the wall. If coke is used there will be little smoke.

CLIMBERS FOR A GREENHOUSE (*Nottinghamensis*).—Habrothamnus elegans, Mandevilla suaveolens, Kennedy's Maryattæ, Dolichos lignosus, Rhynchospermum jasminoides, and Brachysema latifolium. You do not mention the height of your house: therefore we have not included the very tall growers, such as Passifloras and Clematites.

BOILER (*G. W. H.*).—An eighteen-inch cylinder boiler will be large enough for heating your tank 26 feet long, 4 feet wide, and 4 inches deep. You will get enough top heat by means of the flue and wooden slides communicating with the tank.

VAGUE QUERIES (*G. C.*).—What do you mean by "contents of an out-house" for manure? What are "lime ashes?" and how can we tell whether they will be manure sufficient for a crop without knowing the soil?

STRAWBERRIES (*F. G.*).—We have not the material at hand for supplying the information you require, and it would take a considerable amount of time and labour to make the necessary research.

NAME OF PEAR (*Inquirer, Swaffham*).—The Pear known by the name of Lady's Thigh is the French Cuisse Madame. The name is also sometimes applied to the Windsor; but neither of these is a long brown Pear: we, therefore, do not know the variety you refer to. The Grey Beurré is also called Brown Beurré, and Beurré du Roi.

PRUNING OLD BLACK CURRANTS (F. M.).—The proper way of pruning all old Black Currant bushes, and bushes of Black Currants of all ages, is to get rid of as much old wood as you can replace with young wood; and you need cut but the very top parts from the strongest young shoots, unless it be on purpose to furnish young wood for the next season.

LILIPUT DAHLIAS (L. T. P.).—These differ nothing in their culture from the Zelinda and other dwarf sorts. But surely you would not put such common plants into a conservatory till October—not that these Liliputs are common, yet they are *Dahlias*, and *Dahlias* are not house plants till the frost comes.

TROPEOLUM AZUREUM (Idem).—This blue, climbing, bulbous *Tropeolum* ought to have been at work for some months past, like all its kindred. But have you got such a thing at rest? They should all be potted in nice light loam and peat in October and November or very early in the spring; but, like pot Tulips, the sooner they are potted and the slower they are growing, the easier they are managed and the better for their future health.

TANK-HEATING (J. Viner).—We demur first of all to the relative expense; we demur again to a large boiler for such a purpose; and we demur a third time to your proposed arrangement. With a double tank at the farther end, above which your Pines are to be as according to your plan, we do not see how you can heat that division separately without heating the other divisions first. Your plan shows no division in your tank. With these divisions, it would have suited best to have the Pines nearest the boiler, then Cucumbers, then Melons. The plan you propose will do well enough if all divisions are to be heated; but a tank right round would do that without making two connections with the boiler. Under your arrangement we see no use for valves, as you must keep heat at the farther end most of the year. In No. 537, to which you refer, the tank goes and returns in the centre of the house, and the house is divided longitudinally, not across. You do not say the width of your tank—two feet we suppose; and even at that your sluices or valves, if you use them, must be of the width of the tank, or the circulation will be arrested. Your plan will give you enough heat. See articles on "Forcing," "Tanks."

CINERARIA MARITIMA—HEATING A THREE-LIGHT FRAME (T. T.).—This *Cineraria* will not be forgotten: meantime, if you have any plants cut them down to within an inch or so of the soil, and try the tops for cuttings if you like. We want you to keep the bottoms not dry nor yet soaked until they push afresh, and by that time we shall be all right to go ahead. The only objection we have to your plan of heating by a stove inside the frame, and which you would find noticed by Mr. Fish, is that all such stoves like a vertical or upright pipe to secure a good draught at first. Even your upright chimney at the end will not compensate for that upright pipe from the fire, though it will help to do so. To gain an upright pipe of a yard or so, you would have to sink your stove considerably. It might do on the level, but we do not think it will do well. The sheet-iron pipes would require to be well luted at the joints, or smoke would escape at the openings. If the pipes are not more than three or four inches in diameter, and the best coke is not used, they would get encrusted with soot, and the soot and the damp together would eat them through by the second year. Metal pipes would be better, but they would be dearer. The chief advantage of your iron stove is its portability; otherwise a small brick furnace, 8 inches wide, 14 long, and 15 deep, would answer better and be cheaper than the iron stove. And if you took a flue of brick—say 6 inches wide and 6 inches deep for a couple of feet or so from the mouth of the furnace, you could join that with glazed earthenware pipes 6 or 7 inches in diameter, filling the joints with mortar; and if you bedded the length next the fireplace in clinkers and covered with ashes, that would give bottom heat, and the other half could be exposed for top heat. We think this would be cheaper than your iron pipes, but not so portable; but you would get a more regular and genial heat. To avoid a chimney, either a plate-iron pipe or an earthenware one would do for the purpose. To save fuel and insure draught, the bars of the grate must be 15 inches nearly below the bottom of the flue. This and as small a furnace as you could well have would heat nine lights instead of three. If you try your own plan let us know the result. We are chiefly afraid of the pipes going horizontally from the iron stove. A very few bricks would make a little furnace; and all but the feeding-door and ash-pit, &c., should be in the frame.

ROSES INJURED BY THE FROST (E. C.).—The middle of April is soon enough to prune, or cut, or touch any Rose, or any other woody plant that has been severely hurt, but not killed, by the frost. The topmost buds in our plants of the Malmaison Rose are quite safe, and are now pushing after being removed, and well cut in at the roots in October. At a mile's distance from us, as the crow flies, beds of this Rose have been mostly killed to the ground; and Mr. Donald, from Hampton Court Gardens, who came to see us and ours, says his celebrated beds of *Devoniensis* on their own roots are quite killed into the ground, but he shall not lose a plant of them, as they are already showing eyes and swellings on the crown of the roots, and to touch them or disturb them in the least for a long time he would consider daft indeed. He, too, has saved many more hundreds of very young Roses from cuttings this winter, and he is getting all his dwarf bedding Roses on their own roots, so that frost will not kill them outright, but, like his *Devoniensis*-beds—the finest Rose-beds in England certainly—they may have their branches and stems frosted occasionally, but they will push up from the roots such Roses! and all tender Roses are constantly lost in such winters as this when they are all above ground—that is, are worked plants. We are always sorry to hear of losses by such winters; but some people give no commiseration in the case of loss of Roses, for they say "that can only occur to worked plants." The *Dahlia*-beds at Hampton Court have proved how easily Rose-beds might have been saved if we had known in time. Several of those *Dahlia*-beds under the Yew trees were covered with leaves, ready to be trenched in by-and-by, and in the meantime the frost came, the old *Dahlia* roots, not being wanted, were left in the beds, and now they are all as fresh and free from frost as they were last August. Mr. Donald was not the least surprised to see our Roses quite safe, under the circumstances, and said most of his neutral flower-beds would be made shortly with the same description of Roses—that is, with a selection of sorts entirely on their own roots.—D. B.

POTATOES (U. P. T.).—For early use, none surpasses the true Ash-leaved Kidney; for second early Rylott's Flourball, and for latest use Flukes. Buy our "Gardeners' Manual;" it embraces the kitchen, fruit, and flower gardens. We shall soon publish a larger work, which will suit you in every way.

DOUBLE DAHLIAS BECOMING SINGLE (A Constant Subscriber).—Your best Dahlias are evidently worn out, and even if they were only arriving at manhood, so to speak, it is not worth your pains to plant them, or any of them, if you are desirous to have a fair show of flowers. There are so many good kinds of Dahlias now in the market, and plants of them are sold cheaper than second-rate bedding plants, so that in reality to have single Dahlias, and half-single and lop-eared flowers in one's garden, is a slur on our taste. So destroy the whole lot of them, as they are not worth giving away, and procure, by degrees, a first-rate collection, for which you will be thankful when you see the difference.

PINE APPLES (H. Watson, Altringham).—We do not know the Prince Albert Pine. There are two varieties of Cayenne—the Prickly and Smooth-leaved. The latter is the best. It is very large, pyramidal, and of a dark orange colour, richly flavoured, and a valuable sort. It sometimes weighs 7 lbs.

NAME OF PLANT (G. S. M.).—Your plant, which, as far as we can see, has red flowers, appears to be *Thunbergia coccinea*. *T. Harrisii* has different leaves without angular lobes, and very much larger blue flowers.

POULTRY AND BEE-KEEPER'S CHRONICLE.

POULTRY SHOWS.

MARCH 6th and 7th. PRESTON. Sec., Mr. H. P. Watson, Glover Street, Preston.

MARCH 13th and 14th. PLYMOUTH. Sec., Mr. W. R. Elliott, 5, Windsor Villas. Entries close March 1.

APRIL 1st and 2nd. SUNDERLAND. Sec., John Littlefair, 6, Bridge Street. Entries close March 19th.

MAY 21st, 22nd, and 23rd. CHESTERFIELD AND SCARSDALE. Hon. Sec., Thos. P. Wood, jun.

MAY 22nd and 23rd. BEVERLEY. Hon. Sec., H. Adams. Entries close May 4th.

JUNE 4th, 5th, 6th, and 7th. BATH AND WEST OF ENGLAND.

JULY 2nd and 3rd. BLACKPOOL. Sec., E. Fowler, jun.

N.B.—Secretaries will oblige us by sending early copies of their lists.

LIVERPOOL POULTRY SHOW.

IN common with most other people, we like Thackeray's writings, and therefore read the "Cornhill Magazine." We were wending our way, we were going to say, to the "Queen of the Mersey," or the "abode of the merchant princes," or some such fine place, when all at once we thought of the article in the "Cornhill Magazine" on "samples of fine English." Fine names won't do. Boileau had the same objection to them.

"J'appelle un chat, un chat, et Roland, un fripon."

We are not going to write a "Roundabout" paper; we wish we could. While all this was passing through our minds we said, "plain Liverpool!" and then asked ourselves whence such was derived, and what it signified. We recollected on our first visit we horrified our kind cicerone by asking him why Storks were such common shop signs in the town, and he told us with suppressed indignation and pity, they were not Storks, they were the Liver. We ventured one more question, and received for answer that formerly there was a pool to which the Liver (like the Phoenix, it has no plural) resorted. So we had a sort of conversational charade, and "the whole word" was "Liverpool." Well, we asked no more questions of our friend; but having been somewhat of ornithologists from father to son for many years, and never having heard of the "Liver," we felt as the man felt who fished off London Bridge for gudgeons for fifteen years, and having unsuccessfully exhausted all the baits and all the most approved appliances for taking them, he boldly denied the existence of such a fish. Having been asked in the afternoon to join a few friends, we looked at all till we espied one who, like the "portly canon," had a "merry eye," and having made the approaches in due and proper form, we again asked the question as to the origin of the name. "Sir," he said, "it is enveloped in mystery. The same was asked by the presiding Judge at the Assizes some years ago, and no one attempted to answer but Serjeant Wilkins, who said, on his way to court he thought he had solved the enigma; for, passing the gasworks, he read thereon, 'Ex fumo dare lucem.' Above stood the Liver, and thereupon he made bold to say the signification was 'Liver and lights.'"

What's in a name? Let us turn from that to facts. This is the eighth annual Poultry Show. All have been successful, and all have been well conducted. They come at the end of the exhibition season; and the birds that have been winning for months here try their last conclusions, and return to their walks either greater than ever, or shorn of some of their glory. A first prize at Liverpool is an exploit. It is true the number of competitors are not so great as at some places; but then, on the

other hand, the entries are very high, the space is very limited, and, therefore, none but the *élite* enter. But there are certain classes that belong to this Show, and although now adopted by others, yet the initiative belongs to Liverpool. For instance: The class for Single Game Cocks, now divided into two for adults and chickens. The strength of this Show is more particularly in Dorkings, Game, Hamburgs, Bantams, and Rouen Ducks; while, like many, it is weak in Polands and some others. Feeling that it would be unwise to take from the numerous for the help of the smaller classes, these latter are made self-supporting, and all the entry-money is distributed in prizes less 5 per cent. for expenses. Where more than four pens are entered, two prizes are given; where four, or a less number, one only is awarded.

The Show has never changed its locality, and was held as usual in Lucas' Repository. It was quite full; the entries, with Pigeons, amounting to 577 pens. The whole of the end of the building was appropriated to these latter, and the effect was not only striking, but they proved an attractive part of the exhibition.

It is fair to mention before we treat of the classes that many of the cocks showed plainly the effect of the long and unusually severe winter. The combs in some were still frostbitten; while in others there remained the cicatrix to show where the wound had been.

The *Spanish* seemed to have suffered more than others. In this class, strange to say, the hens were better than the cocks. We do not often have to record this. It was the case both in Mr. Fowler's and Mr. Garlick's pens, which took first and second prizes. In this, which, with the exception of Preston, will be the last great Show this season, we have still to note the improvement in this breed.

The Coloured *Dorkings* were very good, and the prize birds were highly meritorious specimens; but exhibitors in this class should bear in mind that mere weight and size are not enough to insure success. They must not be under-rated—no qualities are more essential to success; but they must be joined to symmetry, and moderate good looks. Some of the birds shown in this class were painfully ugly; the prize-pens were pleasing exceptions, especially Captain Hornby's. It gave us pleasure to see the prize for Silver Greys go to Scotland, being taken by Mrs. Fergusson Blair. This lady showed birds perfect in colour. Many other excellent pens in this class had defects in colour, and would have fared better in general competition.

Mr. Tomlinson still wins everywhere with Buff *Cochins*. His stock seems inexhaustible; while in Grouse and Partridge *Cochins* Messrs. Stretch, Musgrove, and Cartwright generally head the class. They did so here. There appears a tendency to get the hens too strongly tinged with buff: in some of them the feathers were laced with that colour. Golden-laced *Cochins* will be a novelty, but we doubt whether they will take.

It is not too much to say that all the *Hamburg* classes were good, and many excellent—better, we think, than anything we have seen of late. We have had to complain of the Silver-pencilled, but they here made amends. The strongest were the Golden-pencilled and the Silver-spangled. Mr. W. C. Worrall, Mr. Pettat, and Mr. Martin, were those who headed these capital classes. We hope the improvement in numbers and quality will continue. We are bound to speak more especially of the increase in the Silver-spangled, because these beautiful and valuable birds had been on the decrease of late.

Then came the *Game*. We know no place where this breed excites such universal interest as at Liverpool, and no place where so many private judges meet to canvass the decisions of those who have acted for the public. The quality of these birds makes it impossible to select other than admirable types of this breed, but it also makes it a work of difficulty to select the best. There is little for a man to accomplish in the way of exhibiting *Game* who has won a first prize here, unless, like the Boy Jones, he has a disposition to repeat his exploit constantly. Mr. Moss seems to have a *penchant* this way; Mr. Archer will plead guilty to the same soft impeachment; Captain Hornby always stands at the head of the Black Reds; and this year Mr. Fletcher has caught the infection. Mr. Henry Worrall contracts for the chief honours of the Duck-wings. These are not all the celebrities, but we cannot name all. We can note a great improvement in the handling of the Black Reds, which are now becoming as close and hard as their Brown brethren. In many instances it was evident the result was attained by a cross with them.

Bantams were very strong in numbers and quality. Miss Musgrove's *Game*, Mr. Conyers's Gold-laced, and Mr. Worrall's Blacks deserve especial notice. A cup is given for the best pen of Bantams in the Show. It would, we think, be well to alter this, and to offer it for the best of one particular breed.

There was a noble class of Rouen *Ducks*, the heaviest we have seen this year, but the Aylesburys were small in number. Mr. Fowler eclipsed himself by exhibiting three that weighed between 25 lbs. and 26 lbs. In any ordinary contest Mr. Hill must have been successful. This country is again famous for its varieties. Every pen in the class was highly commended. The Brown Calls and the Black Ducks were perfect.

The only mention necessary in the self-supporting classes are the *Brahmas* and *Polands*, which were excellent. Mr. Craigie, Colonel Clowes, Mr. Dixon, and Mrs. Pettat were the distinguished.

There was again a hard struggle for *Cochin Chickens*, both in Buff and Grouse. Mr. Tomlinson and Miss Musgrove won victories of which they may be proud. There was also a good class of Whites.

The *Single Cock* classes of every breed brought perfect birds. Distinguished even among such were Mr. Paton's Spanish, Mr. Copple's *Cochin* and *Dorking*, and Miss Musgrove's Grouse bird, and Mr. Worrall's Hamburgs. Mr. James Dixon may also boast of taking all the Poland Cock prizes.

The show of *Game Bantam Cocks* was beautiful, and Mr. Martin Turner may be proud of his success.

At dramatic representations, circus, and such like, there is often an interval of ten minutes. It forms the separation or division between the first and second parts. It affords time to pick up the orange peel, and to rake the sawdust. People shift the positions in which they have been fixed for hours. The clown who has kept the house in a roar sits, weary and dejected, out of sight. The corners of the pantaloons' paint point down instead of up, and the way in which all the employees avail themselves of the rest shows how it is wanted and appreciated. The little tinkling bell, the first notes of the orchestra, or the entrance of that "nuisance of a boy," puts a stop to it. Seventy-six *Game Cocks* do the same for us. We have never seen these birds better, but some of them showed they had not passed unscathed through the winter. As in the classes, the improvement in the Black Reds in the point of handling was great. Messrs. Moss and Archer, who took first in the two classes for adults and chickens, showed perfect birds. We may venture to say the same of all the prizetakers. It would be difficult to find a fault among them. The Hon. W. Vernon, Mr. Slatter, and Messrs. Grimshawe, were the other distinguished. Had the rewards been more numerous, eligible recipients might have been found among the "highly commended."

The attention, liberality and courtesy of the gentlemen who manage this unique Show, are beyond all praise.

The Judges were G. J. Andrews, Esq., and Mr. Bailly.

SPANISH.—First, J. K. Fowler, Prebendal Farm, Aylesbury. Second, J. Garlick, Everton, Liverpool. Highly Commended, Capt. Hornby, Knowsley, Prescott; T. P. Wood, jun., Boythorpe House, near Chesterfield. Commended, D. Harding, Middlewich, Cheshire.

DORKING (Coloured).—First, Capt. Hornby, Knowsley, Prescott. Second, A. Potts, Hoole Hall, Chester. Highly Commended, Miss Bell, Woodhouselee, Canonbie; W. Copple, Eccleston, Prescott; Capt. Hornby; J. D. Hewson, M.D., Coton Hill, Stafford; Mrs. T. T. C. Lister, Beamsley Hall, Skipton; Hon. W. W. Vernon, Ranton Abbey, Stafford. Commended, A. Potts.

DORKING (Silver Grey).—First, Mrs. F. Blair, Inchmartin, Inchture, N.B. Second, G. Cargev, Stone, Staffordshire. Highly Commended, Mrs. F. Blair; Mrs. Lister, Manningham Hall, Bradford. Commended, W. Dolby, jun., Syston Old Hall, Grantham, Lincolnshire.

COCHIN-CHINA (Cinnamon and Buff).—First and Second, H. Tomlinson, Balsall Heath Road, Birmingham. Highly Commended, J. Cattell, Birmingham; T. Smith, Coventry Road, Birmingham. Commended, Capt. Heaton, Lower Broughton, Manchester; W. Dawson, Hopton Mirfield.

COCHIN-CHINA (Grouse and Partridge).—First, T. Stretch, Marsh Lane, Bootle, Liverpool. Second, P. Cartwright, Oswestry. Highly Commended, Miss V. W. Musgrove, West Tower, Aughton, near Ormskirk; T. Stretch.

HAMBURGH (Golden-pencilled).—First, W. C. Worrall, Knotty Ash, Liverpool. Second, J. Martin, Mildenhall Mill, Claines, Worcester. Highly Commended, J. Munn, Heath Hill, Stacksteads; S. Smith, Northowram, near Halifax. Commended, J. Firth, Sily Lane Mills, Halifax; E. A. Wilkinson, Birmingham.

HAMBURGH (Silver-pencilled).—First, J. Martin, Claines, Worcester. Second, D. Harding, Middlewich, Cheshire. Highly Commended, G. Griffiths, Worcester; J. Munn, Stacksteads, near Manchester; S. Shaw, Stainland, Halifax.

HAMBURGH (Golden-spangled).—First and Second, W. C. Worrall, Knotty Ash, near Liverpool. Highly Commended, S. H. Hyde, Ashton-under-Lyne.

HAMBURGH (Silver-spangled).—First, Mrs. Pettat, Ashe Rectory, Basingstoke. Second, J. Fielding, Newchurch, near Manchester. Highly Commended, J. Dixon, Bradford; T. Dale, Middlewich; Mrs. Pettat; R. Bell, 28, Chapel Street. Commended, W. Cannan, Bradford; J. Robinson, Vale House, near Garstang.

GAME (Black-breasted Reds).—First, Capt. Hornby, Knowsley, Prescott. Second, R. Parkinson, Poulton-le-Fylde. Highly Commended, J. Fletcher, Stoneclough, near Manchester; G. W. Moss, the Beach, Aigburth; E. Worrall, Knotty Ash House, near Liverpool. Commended, G. W. Moss.

GAME (Brown Reds).—First and Second, J. Fletcher, Stoneclough, near Manchester. Highly Commended, E. Archer, Malvern. Commended, G. Cargay, Stone, Staffordshire; Captain Hornby; T. Statter, Bury, Lancashire.

GAME (Duckwings and other Greys).—First, H. Worrall, Spring Grove West Derby. Second, G. W. Moss, the Beach, Aigburth. Highly Commended, Capt. Hornby; G. W. Moss; R. Swift, Southwell, Notts; H. Worrall.

GAME (any other variety).—First, J. Fletcher, Stoneclough, near Manchester. Second, H. Worrall, Spring Grove, West Derby. Highly Commended, A. B. Dyas, Madeley, Salop; G. W. Moss, Aigburth. Commended, R. Tate, Driffild, York.

BANTAMS (Game).—First, Miss V. W. Musgrove, Ormskirk. Second, M. Turner, Preston. Highly Commended, J. Camm, Southwell; R. Moon, jun., Sandford Lodge, Wavertree; I. G. Park, Gill Head, Moresby, near Whitehaven; J. Shorthose, Shieldfield Green, Newcastle-on-Tyne; Mrs. W. C. Worrall, Liverpool. Commended, J. Holme, Knowsley.

BANTAMS (Gold and Silver-laced).—First, J. Conyers, jun., Leeds. Second, E. Yeardley, Wisewood, near Sheffield. Highly Commended, T. H. D. Bayley, Biggleswade; T. W. Hill, Manchester. Commended, T. W. Hill; S. Shaw, Stainland, Halifax.

BANTAMS (any other variety).—First, Mrs. W. C. Worrall. Second, T. H. D. Bayley. Highly Commended, Miss L. A. Peters, Moseley, near Birmingham; Mrs. W. C. Worrall.

DUCKS (Rouen).—First, W. Copple, Eccleston, Prescott. Second, S. Shaw, Stainland, Halifax. Highly Commended, J. H. Brackenridge, Chew Magna; J. K. Fowler; J. Holme, Knowsley; P. Longton, Liverpool. Commended, J. H. Brackenridge.

DUCKS (Aylesbury).—First, J. K. Fowler. Second, T. W. Hill, Heywood. Highly Commended, J. K. Fowler.

DUCKS (any other distinct breed).—First, J. Dixon, Bradford. Second, Miss S. Perkins, Sutton Coldfield. Highly Commended, Rev. J. R. Blakiston, Settle, Yorkshire; T. H. D. Bayley; F. W. Earle, Edenhurst, Prescott; J. K. Fowler, Aylesbury; G. S. Sainsbury, Rowde, Devizes; E. Worrall, Liverpool.

MALAYS.—Prize, Mrs. W. A. Mocatta, Bispham Vicarage, Fleetwood.

ANDALUSIANS.—Prize, Mrs. Blay, Gregory's Bank, Worcester.

DORKINGS (White).—Prize, J. Robinson, Vale House, Garstang.

BRAHMA POOTRAS.—First and Second, J. H. Craige, Essex. Highly Commended, Mrs. Fergusson Blair.

POLANDS (Golden-spangled).—First, J. Dixon, Bradford. Second, Mrs. Pettat, Ashe Rectory, Basingstoke. Commended, Mrs. Pettat.

POLANDS (Silver-spangled).—First, Lieut.-Col. T. Clowes, Froxmer Court, Worcester. Second, Mrs. Pettat, Basingstoke.

POLANDS (Black, with white crests).—Prize, J. Dixon, Bradford. Highly Commended, Lieut.-Col. T. Clowes, Worcester. Commended, Mrs. Lister, Manningham Hall, Bradford.

POLANDS (any other varieties).—Prize, Lieut.-Col. T. Clowes.

BLACK HAMBURGHES.—Prize, W. Whiston, Langley, near Macclesfield. Commended, R. W. Fryer, Hinton Road, near Hereford.

ANY OTHER DISTINCT BREEDS.—Prize, Lady L. Thynne, Muntham Court, Worthing.

CINNAMON AND BUFF COCHIN CHICKENS.—First, H. Tomlinson, Birmingham. Second, T. Stretch, Marsh Lane, Bootle, Liverpool. Commended, J. W. Kelleway, Merston, Isle of Wight; T. Stretch.

GROUSE AND PARTRIDGE COCHIN CHICKENS.—First, Miss V. W. Musgrove, Ormskirk. Second, T. Stretch, Liverpool. Highly Commended, P. Cartwright, Oswestry.

WHITE COCHIN.—First, B. Holmes, Birmingham. Second, Mrs. F. Blair, Inchmartine, Inchture, N. B. Highly Commended, M. Thorniley, Ridge Hill Aviary, Sutton, near Macclesfield. G. C. Whitwell, Kendal.

SINGLE COCKS.

SPANISH.—First, R. Paton, View Villa, Kilmarnock. Second, Mrs. J. C. Hall, Surrey House, Sheffield. Highly Commended, T. Davies, jun., Wavetree Nursery, Liverpool; J. Garlick, Everton, Liverpool. Commended, J. Garlick.

DORKING (Coloured).—First, W. Copple, Eccleston. Second, Lady L. Thynne, Worthing. Commended, Lady L. Thynne.

COCHIN-CHINAS (Cinnamon and Buff).—First, W. Copple, Eccleston, Prescott. Second, T. Stretch, Marsh Lane, Bootle, Liverpool. Highly Commended, W. Copple; H. Tomlinson, Birmingham.

COCHIN-CHINAS (Grouse and Partridge).—First, Miss V. W. Musgrove, Aughton, near Ormskirk. Second, Master J. J. Hindson, Barton House, Everton.

HAMBURGHES (Golden-pencilled).—First, W. C. Worrall, Liverpool. Second, Messrs. Carter & Valiant, Poulton-le-Fylde. Highly Commended,

H. Ashton, Aston, near Derby. Commended, G. S. Sainsbury, Rowde, Devizes, Wilts.

HAMBURGHES (Silver-pencilled).—Prize, Rev. T. L. Fellows, Beighton Rectory, Acle, Norfolk.

HAMBURGHES (Golden-spangled).—First and Second, W. C. Worrall.

HAMBURGHES (Silver-spangled).—First, H. Beal, Wexham, Slough. Second, T. Dale, Middlewich, Cheshire.

POLANDS (Golden-spangled).—Prize, J. Dixon, Bradford.

POLANDS (Silver-spangled).—Prize, J. Dixon, Bradford.

POLANDS (Black with White Crests).—Prize, J. Dixon, Bradford.

BANTAMS (Game).—First, M. Turner, Preston. Second, C. W. Worrall. Highly Commended, W. Silvester, Sheffield; H. Worrall, West Derby, Liverpool. Commended, T. H. D. Bayley, Biggleswade, Bedfordshire; R. Moon, jun., Sandford Lodge, Wavertree, Liverpool.

SWEEPSTAKES.

GAME COCKS.—First, G. W. Moss, the Beach, Aigburth. Second, T. Statter, Lancashire. Third, E. Archer, Malvern. Fourth, Hon. W. W. Vernon, Stafford. Highly Commended, E. Archer; J. Fletcher, Stoneclough; Master W. Hindson; Capt. Hornby; E. Lister, Cheshire. Commended, J. S. Butler, Poulton-le-Fylde, near Preston; J. Fletcher; E. Worrall, Liverpool; W. Rogers, Suffolk.

SWEEPSTAKES FOR GAME COCKERELS.—First, E. Archer. Second and Third, G. W. Moss. Fourth, Messrs. W. and N. Grimshawe. Highly Commended, W. Coupe, Langwith, Mansfield, Notts; J. Fletcher; Master J. J. Hindson, Everton. Commended, J. Cox, Liverpool.

PIGEONS.

CARRIERS.—First, H. Morris, Forest Hill, Kent. Second, P. Eden, Cross Lane, Salford. Very Highly Commended, P. Eden. Highly Commended, G. Goore, Liverpool.

ALMOND TUMBLERS.—First, P. Eden. Second, E. T. Archer, sen., Forest Hill, Kent. Highly Commended, W. Smith, Beech Hill, Halifax.

SHORT-FACED ALMOND TUMBLERS OF ANY OTHER VARIETY.—First, P. Eden. Second, J. Percival, Clent Villa, Harborne, near Birmingham. Very Highly Commended, G. H. Hartley, Kendal. Highly Commended, W. H. C. Oates, Besthorpe, Newark, Notts. (A very good class.)

POWTERS.—First, P. Eden. Second, W. Smith. Very Highly Commended, P. Eden.

JACOBS.—First and Second, J. T. Lawrence. Very Highly Commended, J. T. Lawrence; T. T. Parker, Lancashire. Highly Commended, J. T. Lawrence; T. T. Parker. (An extraordinarily good class.)

TURBITS.—First, G. Goore, Liverpool. Second, E. Worrall, Liverpool. Highly Commended, J. T. Lawrence, 16, Newbie Terrace; T. T. Parker.

BARBS.—First, P. Eden. Second, J. T. Lawrence. Very Highly Commended, P. Eden; S. Shaw; W. Smith. Highly Commended, J. T. Lawrence. Commended, R. W. Fryer, Hinton Road, near Hereford; G. Goore. (A splendid class.)

OWLS.—First, E. Worrall. Second, J. T. Lawrence. Very Highly Commended, D. Thwaites. Highly Commended, R. E. Ashton, Limefield, Bury. (A very good class.)

FANTAILS.—First and Second, G. Goore. Very Highly Commended, W. Taylor. Highly Commended, J. Baily, jun., Mount Street, London. Commended, J. Baily, jun.

TRUMPETERS.—First, S. Shaw, Stainland, Halifax. Second, W. H. C. Oates, Besthorpe, Newark, Notts. Highly Commended, H. Morris, Perry Vale, Forest Hill, Kent.

RUNTS.—First, C. Baker, Pheasantry, Beaufort Street, King's Road, Chelsea. Second, J. E. Mapplebeck, Birmingham.

ANY OTHER BREEDS.—First, W. H. C. Oates (Blue Shields). Second, J. Cattell, Birmingham (Hyacinths). Third, J. Foreman, Primrose Hill, Wakefield (Swallows). Fourth, H. Morris, Perry Vale, Forest Hill, Kent. Highly Commended, J. Baily, jun. (Shields and Priests); Miss A. St. George, Malvern (Swallows). Commended, R. E. Ashton, Limefield Bury (Meeves); J. Baily, jun. (Bagadottes); S. Shaw Stainland, Halifax; Lady E. Talbot (Black and White Shields).

GIVING CHALK TO FOWLS—SOW EATING HER YOUNG ONES.

WOULD powdered chalk or whitening do to mix with the food for fowls that are confined, by way of assisting to shell their eggs, as they are very apt to lay shellless eggs?

[Try the experiment. It will do no harm; but we think some limy rubbish in the yard would be preferable.—EDS. C. G.]

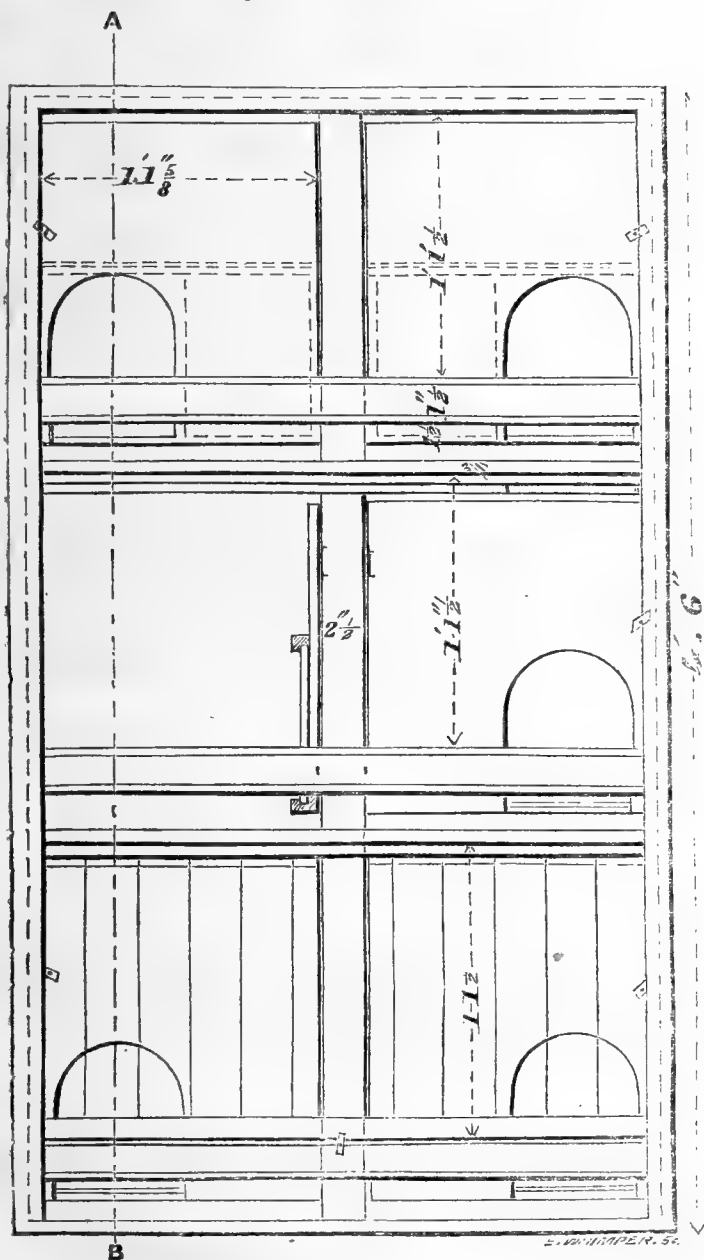
A few weeks ago, in *THE COTTAGE GARDENER*, a person inquires how to prevent a sow eating her young pigs. The best way is, at the time of farrowing to take away every one from her and place them in a box, or barrel, with some short litter. When she has done return them to her, and watch them until they have filled themselves, and then take them away and place them in the barrel for two or three hours. It would be all the better to keep them from the sow, in the barrel, for two or three nights. This is a general practice in the north of England, and I have practised it with great success myself.—JAMES ROLLINS.

A NEW DESIGN FOR A PIGEON-HOUSE.

HAVING had notice given me that my house would be required in the spring for conversion into a barrack, I was compelled in the winter to check my ardour as a fancier of poultry and Pigeons, by a great reduction of my stock; but being exceedingly fond of Carriers and other Pigeons, I retained four or five pair of the former. As I could not bring myself to part with them, I began to think how I could best meet the case, and preserve them and any young and eggs that I might chance to have in April, when, having been obliged to put off the evil day, I must move. I have seen various kinds of boxes, but never one like the present, and if a description of it is novel or useful to any of your readers, my wishes will be fully met. The only thing I advocate is the principle of construction, leaving the dimensions to be regulated by the taste, space to be occupied, and length of pocket of the fancier.

The first box I made was for three pair, as shown in *fig. 1*. (The dotted lines on the nest-doors, show the grooves in which the slides to shut the holes, run behind.)

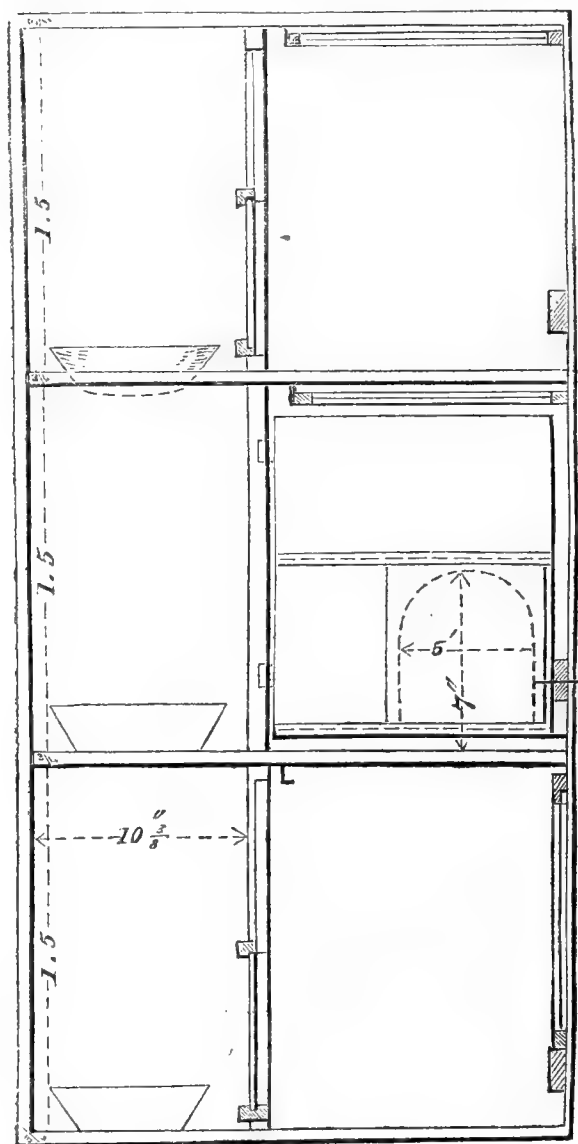
Fig. 1.—Front Elevation.



and floors of each compartment to allow of the front doors folding up. The perching-bar should be about one inch and a half from the floor to allow of a small hoe to clean out, or a drawer might be placed there if preferred.

I have made three of these boxes not exactly similar as to dimensions, as in two cases I fitted up purchased boxes, which is the most economical plan, and I consider that 16 inches to 18 inches is the least height that should be allowed for Carriers. So that the box should be 3 feet for two pairs, and 4 feet 6 inches in height for three pairs, and so on; 2 feet 6 inches would be the best width, and about 2 feet 2 inches, or three nine-inch deals for the depth. The centre partition should run the whole height of the box, and the fillet piece on which the nest-doors are hung should have them put on with butt-hinges before it is fixed to its place in front of the centre partition. The bottoms on which the nest-pans rest, or are let into according to taste, merely slide on pieces nailed to the centre division and sides, and can, therefore, be taken out and scrubbed. The nest-fronts are about an inch from the top and bottom, to allow them to clear the front door when up, and to facilitate cleaning. The front doors are merely frames bolted together with three-eighths-of-an-inch iron-wire bars, at 2 1/2 inches apart. They fasten up by the same button that keeps them shut when down. A beaded fillet, more

Fig. 2.—Section and Elevation on Line A B.



Scale for Figs. 1 and 2, 1 in. = 1 foot.

The top pair shows the box as in every-day use; the second shows the left nest-door open, forming a partition to prevent the young that are nearly fledged, from running to the hen sitting in the next hole; and the bottom shows the front door down, as when used to confine a pair to two holes. If it is advised to make two pens, open both nest-doors, shut the slides, and the feat is accomplished. When open, they are kept in their places by two pins put through the perching-bar, and the drinking-vessel can be hung in the ordinary way.

I have given what I consider the minimum dimensions for stout birds; but in all cases the nest-doors should be equal in width to the distance they are from inside the perching-bar, and the latter should be the same distance below the top of the box

for appearance than anything else, is nailed on the edge of the box as a finish. When obliged to shift quarters to a distance, a box with a lid nailed on will make a good packing-case; or if only a short distance, as in my case, I should put it in a wheel or hand-barrow, and two men can carry birds and all. It will answer outside as well as inside a house, and keep the birds at night safe from cats; and if an aviary is to be fitted up, it is only to extend the number of compartments at the top, bottom, or sides, as required. If Mr. Brent or any other of your contributors would state any objections or improvements, I should be obliged, in order that they might be obviated or made, as my only object in bringing it to notice is, that, as Mr. Eaton says, "I might benefit a brother fancier and could do no harm trying."

WEEKLY CALENDAR.

| Day of M th | Day of Week. | FEB. 26—MARCH 4, '861. | WEATHER NEAR LONDON IN 1860. | | | | Sun Rises. | Sun Sets. | Moon Rises and Sets | Moon's Age. | Clock before Sun. | Day of Year. |
|------------------------|--------------|------------------------|------------------------------|-----------|-------|-----------------|------------|-----------|---------------------|-------------|-------------------|--------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | |
| 26 | Tu | Winter Aconite. | 29.558—29.150 | deg. deg. | | | m. h. | m. h. | m. h. | | m. s. | |
| 27 | W | Periwinkle. | 29.611—29.106 | 53 —35 | S.W. | .40 | 54 af 6 | 33 af 5 | 57 a 7 | 17 | 13 6 | 57 |
| 28 | Th | Primrose. | 29.679—29.258 | 58 —30 | W. | .07 | 52 6 | 34 5 | 27 9 | 18 | 12 56 | 58 |
| 1 | F | Crown Imperial. | 30.016—29.928 | 51 —27 | W. | .01 | 49 6 | 36 5 | 55 10 | 19 | 12 44 | 59 |
| 2 | S | Fritillary. | 30.040—29.968 | 52 —21 | W. | — | 47 6 | 38 5 | morn. | 20 | 12 32 | 60 |
| 3 | SUN | 3 SUNDAY IN LENT. | 30.040—29.968 | 49 —30 | S.W. | — | 45 6 | 40 5 | 21 0 | 21 | 12 20 | 61 |
| 4 | M | Violet. | 30.063—29.925 | 51 —23 | S.W. | .14 | 43 6 | 42 5 | 42 1 | (| 12 7 | 62 |
| | | | 29.826—29.721 | 51 —32 | W. | .30 | 41 6 | 43 5 | 50 2 | 23 | 11 54 | 63 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observation: during the last thirty-four years, the average highest and lowest temperatures of these days are 48° and 34° respectively. The greatest heat, 64°, occurred on the 28th, in 1846; and the lowest cold, 18°, on the 1st, in 1854. During the period 138 days were fine, and on 100 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

Artichokes, if the weather continues mild give them their spring dressing. *Basil*, sow this, and also *Marjoram*, in pans or pots, to be placed in heat. *Beans*, earth up the early-sown crops. If any were sown in boxes place them where they can have an abundance of air night and day to harden them off for planting out. *Cabbage*, the autumn plantations to be filled up; fresh ones to be made. Sow more seed, to produce plants for summer and autumn use; also seed of the Red for pickling. *Cauliflower*, if seed was sown early on a hot-bed the plants should now be pricked out on a slight hotbed, or in a cold frame where they can be protected. *Cucumbers*, the present mild and favourable weather will greatly conduce to the health of the plants, as it will allow of the admission of fresh air daily without fear of receiving injury. Close the frames early in the afternoon, and let them remain shut down till the evening, when a little air may be given for the night as recommended before. After linings have been renewed keep up a constant watch on the state of the bed. *Lettuce*, fill up any vacancies that may occur in the autumn plantations. Sow some seed of the Cos in a warm border. *Peas*, harden off those sown in pots or boxes previous to planting out; place them in a cold frame, and let the lights remain off night and day in mild weather. Earth up the early crops when the soil is dry. *Radishes*, make another sowing, to succeed the sowing made in the beginning of the month.

FLOWER GARDEN.

Where edgings are required for flower-borders they should be planted immediately. Box, Daisies, Thrift, Pansies, the Gentianella, and even the Camomile are all used for the purpose. Finish planting all deciduous shrubs. Plant out Wallflowers, Sweetwilliams, Canterbury Bells, Foxgloves, Columbines, Pinks, Carnations, and all other such biennials and perennials without delay. Get all alterations and the laying of turf finished as soon as possible. Fasten the roots of Pinks, Polyanthus, &c., that may have been raised by the late frosts, and give them a top dressing of rich vegetable mould. Beds of Ranunculuses should be planted without delay if not already done.

STOVE.

Increase the temperature and moisture as the days lengthen. Prepare tan or other fermenting material for renewing the bottom heat. Start such plants as *Stephanotis*, *Dipladenia*, *Clerodendrons*, both the young and the old plants, in a nice bottom heat. Pot *Gloriosa superba* in light, rich soil, putting two strong tubers in each pot, and plunge them in a brisk heat until the shoots appear. Also, start young plants of *Ixoras*, *Franciscea macrophylla*, and young plants of all kinds, to make progress in good time; but the older plants that have set their buds should receive but little or no excitement. *Begonias* and all other free-growing plants to be now

propagated for autumn blooming. Prick off carefully into small pots the various sorts of *Achimenes* and *Gloxinias*, as they appear, in the store-pots or pans; they delight in a moderate bottom heat at this season.

GREENHOUSE AND CONSERVATORY.

Continue former directions here as to temperature and ventilation. Proceed with the potting of young plants, using the soil tolerably rough, with plenty of sand and drainage; to be kept rather close until they have made fresh roots. As the weather is now favourable, endeavour to get all the plants that require it shifted without further delay, taking care to moisten the old ball thoroughly before they are shifted, and also to guard against too much water.

FORCING-PIT.

Remove all *Hyacinths*, *Tulips*, *Roses*, *Narcissi*, *Lilacs*, *Azaleas*, and other such forced flowers from the pit as soon as the blossoms begin to expand. Continue to introduce *Roses*, *Hydrangeas*, *Pinks*, *Carnations*, *Rhododendrons*. Shake out *Erythrinas*, *Salvia patens*, *Fuchsias*, &c., and place them on bottom heat. Sow *Balsams*, *Cockscombs*, and *Globe Amaranths*.

PITS AND FRAMES.

Pot off *Calceolarias*, *Verbenas*, and all such like plants that have stood the winter in store-pots; to be shifted into small pots of light soil, and then placed in a very gentle bottom heat. Also, look out specimen plants for vases. See that plenty of dwarf young plants are at hand—such as *Petunias*, *Lobelias*, *Campanulas*—that are useful for baskets and vases. Those who have not yet attended to the propagation of plants for bedding out must now begin with all possible despatch to put in cuttings of *Salvias*, *Petunias*, *Fuchsias*, *Verbenas*, *Scarlet Geraniums*, &c., so as to have good plants for bedding out in May. A nice sweet bottom heat of dung or tan will answer very well for the purpose. W. KEANE.

DOINGS OF THE LAST WEEK.

DIGGING, trenching, and other matters of routine as last week. Cut down number of strong-staked pyramidal *Roses* that stood in rows with *Hollyhocks*, many of the hardiest even being killed to the bottom. I hope that most of them may break again from the roots or stool. *Hollyhocks* seem pretty sound below the ground, having had a shovelful of dry, burnt rubbish thrown over every stool, which so far kept them dry and free from frost.

Shifted *Cucumbers* from small 60-pots into large 48's, and potted off singly those last sown, using light sandy loam and leaf mould, well aerated and warmed before using it, and kept all in a single light for reasons given last week.

Kept potting off variegated *Geraniums* from the cutting-boxes in which they had stood thick during the winter, as room could be got for them, where there was a little heat. These, when the little pots are nearly filled with roots, will be turned out into portable wooden boxes—say 9 inches by 30 inches, or into temporary beds to be protected with spare old sashes, calico,

&c. Unless I struck the cuttings thick in autumn I could not find room for what I want. If I left the plants so thick until planting time, they would draw and smother each other; and even if struck rather thinly, I find they do not do so well if left in their cutting-pots or boxes, as they do when transferred to intermediate-beds before planting out finally. Though with all this there is a considerable amount of potting, yet I should never get through the quantity required, if nine-tenths of my bedding plants were not struck and ultimately p'anted out without even seeing a pot.

I mentioned lately the cleaning a low flat house, now used for Figs, and filling it nearly with Geraniums. That is next door to a similar division appropriated to Ferns, Orchids, and a few stove plants; and the Fig-house was made into a potting-shed by moving a small potting-board into it, and the house itself made comfortable with a little fire heat. Lumpy fibry loam, fibry heath soil, with some charcoal and silver sand were mixed together after being well aerated and warmed. A portion of the soil outside the balls was carefully got rid of, and most of the plants were put back into similar-sized pots that had been thoroughly cleaned, warmed, and well drained before using. Hanging Stanhopeas, &c., had lumpy peat, chopped old moss, and nodules of dried cowdung stuffed into the openings, and a soaking of water given to set them going.

Some of the fine-foliaged *Begonias* when shifting them had a good proportion of loam and some dried cowdung used in the compost, and some leaves a little brown or blotched were cut clean off, and then cut up into strips half an inch wide and 3 inches long, and then inserted as cuttings round the sides of small pots, on sandy loam, with sand on the surface, rather more drained than for cutting-pots in general, and then plunged in a sweet bottom heat beside the Cucumbers. These, under such circumstances, want no bell or other glasses, and if 18 inches to 24 inches from the glass they will need no shading.

Took off more *Verbena* cuttings, and owing to scarcity of pots put them in semicircular drain-tiles, some 9 inches long and 2 inches across, or more according to size, a thin piece of clay placed in each end, forms the vessel. A hole in the clay at the bottom of each end, made with a stick or the little finger, lets the water pass; rough riddlings are placed in the bottom of the tile, and then suitable soil as for a pot for cuttings. We shall plunge these in a slight bottom heat from leaves. We like spring-struck plants best, in the case of *Verbenas*. When these are struck and growing, the whole tile will be a mass of roots, and then we generally turn them out pretty much as they are into temporary beds. A slight stroke on one end of the tile brings all out in a piece, like a cheese out of a mould, just as out of a pot, and, in this respect, I prefer these rough tiles to square pans made on purpose. It is amazing how some things seem to cling to the clay ends. These ends are frequently used again and again during the season, as the tiles when emptied were used again and again. When extra economical, we have collected a number of these clay ends at the close of the propagating season, placed them under cover, and covered them with moss, and then next season when placed in a tub of water for half an hour or so, they were soft enough to place in the open ends of the tiles again. Such drain-tiles, if new, should be soaked before using; if old, be thoroughly washed before using them.

Removed some of the earliest pots of *Potatoes* from Peach-house to a cooler place, where the frost will not be much more than excluded, average at night 40°; in order that the growth upward may be arrested, and the tubers may form and swell faster, the heat will rise in sunny days. Put some eight-inch pots in their place, planted with five Tom Thumb *Peas*, intending to gather from these pots. Sowed also in 60-pots, to be repotted to see which does best, having always faith in early *Peas* transplanted. Sowed, also, boxes of Mazagan Beans, and Sangster's No. 1 *Pea*, on the 16th, to be transplanted after being hardened off. This is quite early enough, as such plants should not be too much stunted before taking them out to the open air. From such sowings under glass, turned out in the middle or end of March, we have frequently gathered a fortnight and three weeks earlier than from those sown early in November, after all the trouble of protecting them in winter, and slug hunting almost every mild morning. We have given up autumn or early-winter sowing many years.—R. F.

ERRATA.—Page 282, col. 1, third line, second paragraph, from a top, "injured" should be "syringed." Page 282, col. 2, second line from a top, the word "bulb" should be "bulk."

YOUNG VINES CROPPED AND NOW UNFRUITFUL.

WILL you give me your opinion respecting some young Vines I have here? They were heavily cropped the first and second years after planting, and they came under my charge in the third year, when they made very strong wood, but produced very little fruit this, the fourth year, although the wood was thoroughly ripened. They are breaking very weakly, and showing no fruit. I am well aware that cropping them in their young growth is the cause of no fruit now. What would you advise me to do; replant the house, or let them remain to gather strength? I am of opinion they will never recover.—T. W. F.

[We are a little in doubt, as the Vines made such strong wood last year. Are you sure that the weakness now may not be owing to the roots being injured by frost, or a part of the stem being unprotected out of doors? We are quite of your opinion as to the effect of early fruiting; but the strength of last year's wood would seem to imply either that the Vines had recovered, or the roots had got too deep. In the latter case, raising the roots would be the best remedy. If from frost or exhaustion, it might be as well to replant. But try how the Vines get on; for if the border is all right, you might plant young ones in June, and keep both for a season.]

PLANTING GLADIOLUS AND OTHER BULBS.

STAUNTONIA LATIFOLIA HARDY—BEDDING LOBELIAS, TROPEOLUMS, &c.—WALTONIAN CASE—ROSES FROSTED.

THE last experiment I made was on the 18th inst., and Gladiolus was the subject of it. Last autumn I had a lot of fine "roots" of "the best bedding" Gladioluses from one of the finest gardens in England; but as I cannot find the name which was sent me with the bulbs in any of the London catalogues nor in Mr. Standish's lists of Gladioli, it would be worse than useless for me to mention the name here, for I should soon have a hornet's nest about my ears for any name that is not in common. Without knowing the kind of Gladiolus myself, and not wishing to bother my good friend about the sort, lest I should never have another root out of his stock or a leaf out of his book, I resolved to keep the bulbs in a very cool room at the top of the house, in an open basket, till the middle of April, and then plant them in the open ground at once. But as I was looking for some seeds to sow, I had to turn the basket of Gladiolus bulbs aside, and on examining them I found every one of them just beginning to make roots; and I said to myself, "They must be of the breed of Gladiolus racemosus, and I must put them to work just two months sooner than I intended," and so I did.

I put them in the open ground in "knots," five bulbs in each patch, and all the patches in a straight row, ribbon-fashion-like, which is the best fashion in our day to plant out all sorts and manner of hardy bulbs, from the Snowdrop to the Gladiolus and Japan Lilies. Keep every kind at the exact distance from the walk or side of the border or bed, and you need never be wrong in filling your flower-beds just as full of spring and early-summer bulbs as you would like them to be with bedders. I planted them three inches deep with some cocoa-nut stuff under them, and over them, and all round them, and an inch or rather more of the stuff all over the border for mulching. This is better, I find, than sand for planting bulbs with.

Now, come what will, these bulbs of this first-rate bedding Gladiolus will not be taken up or disturbed as long as they and I shall live, but I shall keep the frost from them: and I do not recommend the plan for general adoption—I merely want to prove if a hardier race of Gladioluses than that which Dr. Herbert had out in Yorkshire for twenty years and more will do as well as his did, and will improve by age in the absence of disturbances, just like patches of the common Narcissus. The bulbs cost me nothing, and I can plant the same border just as if they were not there; or, rather, just like

the man who last week planted his Broad Beans at the distance of nine feet between the rows, so that he can plant or sow whatever he has a mind for on the spaces between the rows of Beans, quite up to the foot of the Beanstalks—which is a great saving in ground, and for the old family dish of Beans and bacon that is by far the best plan to have the Beans properly flavoured. But my rows of bulbs are always in patches along the row, with room for anything between the patches.

Although I should be slow to recommend others to try the plan which Dr. Herbert, who was the best practical authority we ever had for bulbs, had found to be the best for Gladioluses of the elder races—that is, those of the *cardinalis* breed, with the white, whitish, and speckled white Cape kinds, and which needed to be always planted in October if they were taken up year by year—I say, without recommending this that I have done, I would strongly and very earnestly advise all those who really enjoy the finest flowers, to look over their own Gladioluses as I happened to have done; and if they see the least sign of their making roots, to put all that do show roots into earth immediately, and without another hour's delay. All common bulbs, and some bulbs that are not common, will never make a root till it is natural for them to begin to grow; and the commonest bulb will suffer more or less from being out of the ground when it is natural for them to be growing. Some bulbs will not recover in six long years the injury they will receive for being planted six weeks behind their own natural time of starting: indeed, you may take it as a rule that all bulbs lose a year of being in perfection for every week they are out of the ground behind the right time. But, on the other hand, good gardeners who really understand the nature of bulbs, and good nurserymen who understand their own interest and how to promote it with their bulbs, can improve by high cultivation almost any bulb, so as that one season of their way of culture will counteract the effects of two seasons of bad cultivation. But then we do not write for first-rate gardeners; and if we did for second-rate nurserymen, they must give no heed to things which might not square with their philosophy of trade measures. Among the rest of those by whom our writings are read, bulbs are the most ill-used plants in the world, just because they can bear it better than other kinds of plants without seeming to be the least hurt at the time.

I would also recommend all those who can afford it to buy in a few of the new races of Gladioli; they are much easier to grow than any of the kinds of Potatoes, and they are not liable to disease. This is the best time in the year to go to market for Gladioluses of the present day. But I ought to have said to those who may find their "roots" rooting just now, that one bushel of them may be started on a square yard of ground, but always in the open ground, and a provision made for covering them if the weather was wet or frosty: then they may remain from the beds and borders till May. Pots or boxes, however, will do better and be more convenient for them, and the chances are that a pot is full of roots before the top is seen; and unless the mould in the pot is very dry indeed, spring-potted bulbs, be they Gladioli or be they not, will not want watering till the leaves are up two inches above the soil. The next step after this, the last experiment, is the last discovery; and here each of us, writers and readers, can supply his and her turn in their season.

I was surprised and much pleased at my last discovery, which was that my favourite evergreen climber, the *Stauntonia latifolia*, has not been killed this winter. I have it on a north aspect by the side of a window, and the stem is green and fresh, eighteen inches above the ground. It has been there since we had it in THE COTTAGE GARDENER six or seven years back, without having had any protection all the time; but my way of treating climbers of all sorts is so very different from the common run that this needs explanation. My *Stauntonia*, which may

now be eight or nine years old, is not yet sufficiently strong at the roots to warrant my method of management—leaving one inch of the last year's growth when I prune it back in the spring, and each year it has been cut back to the crown of the roots in April, and each succeeding year it twines farther and farther on the wires; but at the rate it has been progressing at, I should judge it would take fifteen or eighteen years before it would be right for me to allow it more than an annual crop of shoots and branches. If I had it in-doors—say in a place like an orchard-house, of course I could give it so much good stuff as would bring it up to the age of manhood, so to speak, in five or six years; but to do that out of doors would just be in effect like giving strong bottom heat to *Echites caryophylloides*—one of the most splendid stove climbers in England, and certainly the most difficult plant in cultivation to bloom freely, and which requires exactly the same in-door management as my *Stauntonia latifolia* receives in front of my cottage—that is, *as much power to the roots, yearly and without stimulus, as the sun and season of each year give to the leaves and branches*. That is a great natural secret which could be used to great advantage in two different ways—to acclimatise as it were, and to bloom exotic climbers which were difficult to succeed with under the ordinary modes of cultivation.

But to return to the experimental work for the last season, and to the work of propagation at the present time. I may remark that the whole of the experiments at the Chiswick Garden last summer as far as they went, under unfavourable circumstances, go to prove what had been already asserted in these pages. Out of forty kinds of named *Lobelias* none proved better for bedding than *speciosa*, and not one of them so worthy of being planted in beds; but for trailing over vases or rustic baskets, there are three kinds better adapted than *speciosa*:—the original *gracilis*, otherwise called *bicolor* (a bad name, however, as the *Erinus* breed has bicolor varieties likewise); a pure white *gracilis*, called *erinoides alba*; and *Lindleyana*, which is a common sport of *gracilis*, for the last twenty years, and with rosy lilac flowers. These three are the best of the *Lobelias* for hanging plants and for growing in pots. Mr. Eyles, however, had several of the kinds growing in pots, for which they seemed very well suited. They were exceedingly well done, and would be very handy in country places for the purposes of decoration. Of all the plants under experiment in the open air the *Lobelia* proved the best. If they saved the new seedling *Lobelia* from *speciosa* which I mentioned last year from the Crystal Palace, it will be equal to, if not supplant, *speciosa*. If it will stand a dry summer so well as it did last season it will be an improvement on *speciosa*.

Of *Calceolarias* and *Petunias* for beds, we could make nothing worth naming; and not much more out of the hundreds of *Verbenas*.

Of the dwarf bedding *Tropæolums*, none were so good as *elegans* and *Triomphe de Hyris*. The Tom Thumb breed of these flowered very freely and with good foliage; but since we got *elegans* all these look too much of the common *Nasturtium* smack to be novel or interesting; still they are very useful and easy to manage, and not nearly so much trouble to keep in their places as the old kinds.

The *Lupins* were all more or less coarse for bedding, but some of the new kinds were desirable border plants. *Lupinus tricolor elegans* was, perhaps, the best of them, as being the lowest grower of the tall sorts; the flowers are white and lilac. *Lupinus insignis*, or *hybridus insignis*, is different from the usual blue of the family, being more of a purple and lilac, and also a moderate grower. *Lupinus Hartwegii albus* might be useful in back rows; but upon the whole *Lupins* were not much. Many newish *Viscarias*, but with the exception of *oculata nana*, they were either not better than the old *Viscaria oculata*, or the season did not suit them; but

oculata nana, if you get it true, is really a fine annual and a lasting one—it is only one-half the height of oculata, and the same colours, are, or were, in that dull season much brighter. *Oenothera bistorta Veitchiana* is a beautiful rich yellow flower, even in this family; but the plant is a dead failure, being a bad grower and liable to die or look sickly in such a season. A new *Clarkia* called *pulchella pulcherrima* (the oddest name in all our books except the Spanish bulb Lapiedra, the English of which is Stone-stone bulb). This “Pretty Prettiest Clarkia,” is the best of them all after the white and purple old ones. There were some pretty varieties of the old *Chrysanthemum tricolor*. Burridgeanum and venustum were the best of them, but they are not yet sufficiently fixed in their new markings to be trusted to, or else the wet weather caused them to sport back. I thought the truest of them might pay to be kept by cuttings, as, if one had a row of them true in front of a row of Dahlias, at the back of a ribbon-border, it would form one of the best lines we have so far from the eye.

Bedding Geraniums were very numerous, but not in a condition to be strictly judged, and, like first attempts, there were no means of comparing kinds to arrive at the synonymes, or second names—as, for instance, to see what the difference, if any, between Lady Middleton and Trentham Rose, and so on through all the sections. As far, however, as our means supplied, a very good report on them has been made by our Secretary, Mr. Moore, who has a famous knack of comparative anatomy in the matter of variations in flowers. We had none like him in that line since Mr. Sabine died; but he is less botanical, and more popular in his descriptions than Mr. Sabine was, and without a spark of pedantry. But, as in Lobelias, there is nothing new to report in Geraniums to the readers of THE COTTAGE GARDENER, that they have not had over and over again, save a few recent seedlings chiefly from abroad, and these are more for pot culture than for beds. Tom Thumb is discarded in favour of the Crystal Palace Scarlet, which had eight claimants, and eight different names to support their presumptive evidence that each respectively was the lucky raiser of it. The name it is to bear in the books of the Society is not yet finally determined upon; but being the best of the breed of the Frogmore Scarlet, the balance lies in favour of calling it the Improved Frogmore, in order to discard all others which appeared under that name since 1830—a good idea, but is sure to lead to more confusion with that name. Punch is down where he always was, Christine the same, Baron Hugel ditto, Harkaway the same, and so on with them all, without a single change from our own pages, and not nearly so many kinds as have been on our lists. But as there is now a fair field open in Chiswick Garden to determine the relative merits of new seedlings, I shall not take one more into the Experimental Garden from strangers, without the old fee of five guineas for proving each seedling. At the same time I offer my very best thanks to all those who enabled me to keep my head above water while the Horticultural Society was going through the new hot-air furnace.

In propagation we are threatened with a second edition of Mr. Forsyth's Kilogic system of bottom heat by hot-air chambers. But upon a small scale I know of no better contrivance yet than the Waltonian Case. Mr. Walton himself has had it at work for the last month, and at the bottom of his garden is his stable and coach-house, and a large smoking heap of dung in the muck-pie corner; yet he and his gardener still hold to the Case in preference to a hotbed of dung so early, and which they could so easily have with no expense, although he has one of the largest, if not really the largest, garden in Surbiton, where gardens now count by the hundred. But Mr. West, the manufacturer of the Waltonian Case, has left us, and is gone down to Winchester, as you see in his advertisement. The last time I saw Mr. West he

told me he had got a large stock of them ready for immediate delivery, and he had sent some to New York last summer to my own knowledge. Propagation will be more busy this spring than it has been for a long time. Roses alone will need double the usual run of spring work, owing to so much destruction by the frost.

I never heard of so much damage done among Roses, and yet about here we have scarcely lost one. La Marque is safe; Gloire de Dijon is a robust runner on the walls, more like a Sempervirens than a Tea. But the best garden for Tea Roses near me is scarcely six feet above the level of the Thames, the bottom is wet, and no fruit tree lives longer in health than its roots reach the water below, which cannot be drained for want of a fall; the soil is black sand, which the winds blow about in hot seasons, and yet Tea and all the more tender Roses on their own roots hardly ever lose a shoot, and this winter they have no deaths there, but some of the kinds are very much hurt. But I recollect Rosa odorata, the very first Tea-scented Rose in England, and the day it came out. I have seen it propagated in hotbeds in the spring just as freely as Robinson's Defiance will be struck this spring. I made a bed of it myself just two and thirty years since come next May; but it was both a tender grower and of a delicate constitution, so that slight frosts used to damage it much, and we had to work off so many of it by cuttings every spring to keep up appearances. Now, if I had so much stable dung as I see going smoking to waste with Mr. Walton, I would make up a bed of it to-morrow, or with it and one-half dried leaves, for forcing Roses to make young shoots to strike as freely as Verbenas. I would up with some of the dead topped Roses, and try what the heat could drive out of their roots for me to strike from, and the tops, if I could just get three clear joints for a cutting, or two joints if that were long enough, could not be too young for the purpose; but, of course, one would need to know what he was at to be able to strike such sucklings, and a Waltonian, with the air inside it kept half moist and half dry, would effect it better than a muck-bed in most hands not used to the work. Then my next bed would be for striking Roses without making cuttings of them as I described last week, and for that a wooden shutter over my cutting-box would be quite as good as the best glass. Give me the box, the bed, the shutters, and the longest shoots of your best Roses, and if I do not root every eye of them I could tell the reason “why for not.” D. BEATON.

THE OLDEST TREE, the age of which is historically determined, is the sacred Fig tree of Anarajapoura, in Ceylon. It was planted by Divinipatiassa, in the year 288 B.C.; and its history from that date is preserved by a mass of documentary and traditional evidence. It has been described by the Chinese traveller, Fa Hiam, in the year 414, and by the earliest Europeans who visited it. It still flourishes, and is an object of worship to the Buddhists.

SOWING TOM THUMB TROPÆOLUM FOR A RIBBON-BORDER.

MAURANDYA BARCLAYANA AND LOPHOSPERMUM SCANDENS FOR BALLOON TRAINING.

I INTEND having a long, narrow border of the new Tom Thumb Tropæolum planted ribbon style. Now, whether would it be better to sow in the open air on the border where they are to flower, or to sow in a frame with heat or without heat? In either case, what is the proper time for sowing?

Would Maurandya Barclayana and Lophospermum scandens answer for covering small balloons about 2 feet high? or would they grow too strong?—PAUL RICAUT.

[The end of March is full time to sow Tom Thumb Tropæolums in-doors, and the 10th of April, or the week in which that day stands, is the best time to sow Tom Thumb out of doors. All kinds of the common Nasturtiums, of which these Toms are but one, do, and always did, infinitely better from open air sowings than by any other means. Even the seeds of

Elegans, and of all cross section from Lobbianum, remain in the ground all the winter as safe as nuts, and come up by thousands next April and May, and make far better plants than all the hotbed sowings in the country. The bother is that not one out of a score of that breed ever comes true from seeds, therefore, cannot be depended on for beds; but for sowing on roots and in wildernesses these seedlings often come better suited than the parents.

The *Lophospermum scandens* would do no good, for want of room, as you propose; but a year-old plant of *Maurandya* would do very well if the soil and situation suited.]

A REMEDY FOR THE POTATO DISEASE.

IN all affected Potatoes, even before the disease is visible to the naked eye, there is found a degree of moisture very far in excess of that met with in sound Potatoes; and this watery principle gradually increases until the disease itself makes its appearance, when the character of the Potato is changed; and the transition from comparative soundness to complete rottenness is sometimes the work of a day, but oftener the doings of an hour. Cultivators are indebted to Professor Bollman, of St. Petersburg, for the accidental discovery of a remedy, which has been found to answer so well in Russia that on many estates drying-houses have been built for the purpose of carrying out the experiment, and it has been in operation in that country since 1853; it has, consequently, undergone seven years' trial. In the autumn of 1853, Professor Bollman received from a friend (a Colonel in the Russian army stationed in Siberia), a sample of a new Potato, with which he received two recommendations—namely, good in quality and a perfect hundred-fold in produce. These Potatoes were accidentally placed on the back of a stove used for heating the Professor's study, where, by some mischance, they were forgotten till the planting season arrived. When discovered, they were shrivelled so much that fears were entertained they would not grow at all. However, the Potatoes were planted, and flourished to such a degree that the two recommendations before mentioned were pronounced to be verified; and what was more remarkable still, although all the Potatoes in the neighbourhood, and throughout the country, were more or less affected by disease, every Potato of the new kind was entirely free from the disorder. This induced the Professor to adopt the expedient of drying; and, in consequence, the entire produce was submitted (after being dug) to a high temperature, which had the effect of charring some of the Potatoes, and shrivelling the rest. It was surmised at the time that some of the charred Potatoes were killed. They were, nevertheless, planted at the proper season; and the charred Potatoes grew, and did quite as well as those Potatoes which were merely shrivelled. The year 1855 also proved that, although the disease was generally distributed throughout the country, not one of the Professor's new Potatoes was affected by it in the least. The experiment was again repeated in 1856; and the crop exhibited the same freedom from disease. The kinds mostly in cultivation were then operated on—sorts which were yearly more or less affected by the disease—still with the same result. The digging time of 1857 produced a splendid crop of Potatoes. Upwards of three acres were planted with kiln-dried Potatoes; and although the produce exceeded 1600 bushels, not a diseased Potato was discovered. In 1858 Professor Bollman erected a drying-house, with heated floors, on his estate; and within the past two years similar erections have taken place on the different estates of the principal landed proprietors. It is gratifying to find that the action of the shrivelling process on Potatoes already diseased arrests the progress of the infection, and kills the disease, thus leaving a portion of the Potato sound enough to be eligible for spring planting. It has been stated that by the constant raising new varieties from seed, for planting, the disease may be considerably diminished; and this proved to be the case with the Fluke Kidney, for the first two years after it was introduced, and even after its cultivation had become pretty general, this famous Kidney had not been attacked by disease; but last year the Fluke had been in some instances as badly diseased as the Fortyfold, Regents, &c., so that the process of kiln-drying promises far greater advantages and more certain results than all the expedients put together which have been from time to time offered for the consideration of the public.—(*Irish Farmer's Gazette*.)

[We consider this well worthy of a trial. No experiment

could be more easily made, for any one could put some of his seed Potatoes into a moderately-heated oven, and keep them there until well shrivelled, or even slightly burnt on one side, but not so much as to injure the vegetating power of the tubers. Let three rows be planted with these oven-dried sets alternately with three rows with sets from the same sack of Potatoes not oven-dried, and at taking-up time let the comparative produce of each three rows be accurately weighed, and the comparative amount of diseased tubers be ascertained and reported to us for publication.—Eds. C. G.]

CONSTRUCTING AND HEATING A SMALL VINERY, &c.

I HAVE two Vines (a Sweetwater and a Black Hamburg), planted about four years ago against a south wall 10 feet high. They form two branches about two feet from the ground, which are trained horizontally; and from them ascend, at proper intervals, to the top of the wall, fine rods the growth of last summer. The ground was not prepared for them, but they were merely stuck in—because I had them by me, and were, in fact, neglected pot Vines. No particular care has been taken of them, and they have merely partaken of the dressing of the flower-border two feet wide, with at times a little blood and liquid manure. Perhaps their prosperity may be accounted for by their being planted on the site of an old pigeon-house; the soil being a deep black mould full of large flint, between which and the marl there are about six feet of sand. There was a fine show of fruit last year, but it came to nothing on account of the season. Now, I wish to turn these Vines to account by placing a small greenhouse over them, 10 feet wide, about 24 feet long (the distance to which the two Vines at present extend along the wall), the front to be 5 feet high. What would be the best height for the back wall?

The Vines are to be the main consideration; but I wish for a shelf two feet wide in front, and a low stand towards the back—not high enough to shade the Vines on the back wall—for flowers. The roof is to be fixed, but made in large sashes, so as to be moveable to the site of a new parsonage in two, or at most three, years time; the ventilation to be formed by openings at the top of the back wall (which I suppose must be raised), with sashes to open in front. Would it be best to confine the Vines to the back wall, or to train them also down the glass at intervals of four feet? Now, bearing in mind the temporary nature of the structure, how could the flowers be best protected in the winter, and the Vines a little assisted? On the north side of the back wall I am about to fix a thirty-gallon copper, to be used occasionally for cooking purposes in the winter. Could that be turned to account by forming the front shelf of a wooden tank two feet wide—the length of the house, and connecting it with the copper by small flow and return pipes, with stopcocks to cut off the communication during the short intervals that the copper might be used for other purposes? I wish to run the flue from the copper under the path of a small orchard-house. The ground level is three feet higher in the yard and small orchard-house than it is in the intended greenhouse; so that a place for the copper would have to be sunk that much at least, in order to bring the top of the copper on a level with the tank, which is to form the front shelf in the greenhouse. The flue could not have much rise. Would large flints do for the bottom and sides of the flue after it gets a certain distance from the fire? They would be underground, as the borders are raised above the path in the orchard-house.—A DEVONSHIRE VICAR.

[The wall being 10 feet high, and the house to be 10 feet wide, there is no occasion for raising the wall unless you like; but, of course, the higher you raise it the longer would be your sloping roof. As that roof is to be fixed, you might have a double wall-plate to your wall, and strong studs every three feet between the wall-plates, and between these studs you might have ventilators fixed on pivots. If you did not contemplate forcing early, you might have ventilators all the way between your sashes on the Sir-Joseph-Paxton principle. If none of these modes suit you, you must have two or three ventilators at the apex. If you did not mean to force the Vines, one opening at the apex in the middle, and an opening at each end over the doorway, with air in front, would be enough for a twenty-four-foot house. If your flue is to be covered over we do not see

much advantage in carrying it through the orchard-house, as you would not wish to excite that in winter, though that could be counteracted by abundance of air. We have little faith in flints for the sides of a flue when you get a yard from the copper; it would be much better to use earthenware pipes from 6 to 9 inches in diameter. You must sink your boiler enough to get a little rise at first, or the flue may not draw well. We fear that heating the greenhouse will be an expensive affair from the large size of the boiler, or rather from its holding so much water. See what has been lately said upon boilers. You do not say what you mean to cover your tank with, but we presume slate—and that must be pretty well exposed to heat the house; and in that case the plants standing in it would require to be set on pieces of wood, or a shelf over the slate, to keep the pots from being too much heated. With sand, &c., over the slate, a good propagating-place would be formed for cuttings, but the heat would not pass freely into the house. The plan, however, will answer if you merely wish for a mild heat to assist the Vines and keep the frost out. One pipe must go from the top of the boiler to go into the flow-side of the tank, and another must come from the return-side into near the bottom of the boiler. A two-inch pipe in either case will do; and if you have iron for a foot from the flue, the rest of the connecting-pipe may be lead. You will greatly increase the crop of Grapes by bringing the Vines down the roof every four or five feet, but do it gradually.]

ROOTS DESCENDING INTO DRAINING-PIPES.

I HAVE a field the surface of which for about 18 inches deep in some parts is rather sandy, and others stony: indeed, rock crops out on the highest part. The subsoil is chiefly some very good clay fit for floor bricks. In November last I drained the field every 6 yards, and 3 feet 6 inches deep, with pipes and collars, and in one part I put in intermediate-drains 18 inches deep. The ground has been ridged, and I intend sowing it with Mangold Wurtzel; but an intelligent farmer informs me that last year he grew some in a field having a good deal of clay, and drained by tiles 3 feet 6 inches deep, and in the autumn some of the drains were stopped. On opening them he found the Mangold Wurtzel roots had reached them, and got inside the pipes, and produced the stoppage. This alarms me as to consequences; for although I apprehend that the root when severed will die, still, if the substance is in the drains, a lodgment and stoppage will ensue. I shall be obliged by your opinion, and any information or advice as to the effect of the Mangold Wurtzel on the drains, for my guidance.—I. G.

[No longer since than last week a case was submitted to us in which the pipes were laid at distances from the surface varying between 3 feet and 5 feet, and in which they had become stopped up by roots penetrating between the joints. We advised a foot deep of stones to be put over and around the pipes, so as to cut off the temptation to descend from the roots. If the soil is fertile, was dressed with common salt at the time of sowing, the ridges thrown up as high as possible, and the Orange Globe Mangold Wurtzel sown, we think the pipes would not be choked by the roots of that variety. We shall be glad to receive information from any of our readers upon the subject of drainage-pipes being stopped by roots, and the best modes of preventing it.]

COVERING VINE-BORDERS.

LAST summer being so very wet and cold, I covered the Vine-borders early in September with long strawy dung just as it came from the stable. The covering for the earliest house was about a foot thick when it had settled; for the late houses about half that thickness. Over these coverings were placed boards (panels of an old fence) laid sloping from the house, so as to shoot the wet off. After the border was covered the front lights of the earliest house were never opened, and about the middle of November the Vines began to break without any fire heat at all—in fact, they had no heat until the middle of December, when the frost rendered it necessary. By the second week in January the Vines were in flower, and are now taking their second swelling. Yesterday (February 12th) the covering was removed, and the border examined, when I was gratified by finding that 18 inches below the surface the temperature was 62°, which is, I think, pretty fair considering that we have had 30° of frost, and that there was no heat in the covering.

During the frost I had the front and lower part of the roof covered with straw every night, which I found made a considerable difference both to the temperature and the coals.—VERITAS.

ON THE SPRING MANAGEMENT OF THE AURICULA.

NOT border Auriculas—Save the mark! these are the greatest annoyance possible to the regular, downright Auricula-grower. No matter what seed he saves, and how careful he may be in hybridising, he is tolerably sure to get a bushel of these, which he (I hope “D. B.” will not think him a Goth), ignominiously consigns to the refuse-heap; and, indeed, if a grower really does wish to save first-rate seed, he will carefully avoid growing any of these “Aulpeens” in his frames. Doubtless, some of them are very pretty, and a long border of them would look very charming, especially after a good drenching rain, such as we get in April, when they are in bloom. Decorative gardeners may work away at them as hard as they like; but they will not alter the true florist’s opinion of them. By-the-by, between these two classes there is a perpetual feud. The sticks and shades, canvass coverings and other contrivances, are to the decorative gardener an abomination; and let one expatiate as he may on the beautiful colour, the exquisite paste, or the glowing foliage of a stage Auricula, you may see a quiet twinkle in the eye of your friend, and perhaps a gentle tap on his forehead, intimating in Scotch phraseology that you have “a bee in your bonnet.” “Masses of colour, Sir! rich contrasts! These, Sir, are what we want; and rely upon it, Sir, the taste of the public is with us.” Yes, doubtless, the *uncultivated* taste. Why, nine persons out of ten will prefer a grand historical picture painted by that rising artist, Augustus Nameless, Esq., A.R.A., to the most exquisite production of a Teniers or Ostade. Who cares for that little tiny cup of “cracked china,” but the man who has gone through all the varied productions of the handiwork of the celestial potters? Give £150 for that! Madness! Aye, but he has cultivated his taste, and hence he sees a value where others do not; and, after all, such are generally right. Take one of the public and go through the beauties of that little Teniers, and you will find, generally speaking, that he acknowledges the right to be on your side. So say I for the florists’ gems. They well deserve all the praise we can bestow on them, and all the care we can give them; and of them all, none exceed in my mind the Auricula, of whose spring management I wish now to say a few words.

When that intensely cold weather set in before Christmas, I took, as doubtless all growers did, especial care to cover up my frames with frigi domo, and dame Nature kindly undertook to add an additional covering of snow; and as they stand in their winter quarters where the sun does not reach them, the covering remained on them until the frost quite went. With what trembling I at last took it off, and after a month’s confinement looked in to see how my beauties were! A fond mamma, after a few hours’ absence, taking off the coverlid of the cot where her little one lay sleeping, can sympathise with one’s parental love. It was with no little satisfaction that I found them as “right as a trivet.” Of course, at this time of the year they are reduced to, comparatively speaking, few leaves; but there was no black spot, no fly, no mildew, “no nothing,” and I saw that I might very soon prepare for my spring work of top dressing; and as, happily, my stuff for that had been under cover, I could get about it at once, and, the weather being open, there did not seem to be much risk.

As the Auricula rejoices in a light, rich top dressing, my practice is to use nothing but well-rotted cowdung, “pure and simple,” with a little silver sand. Some use leaf mould and loam with it; but Auriculas seem to me to thrive best with the cowdung alone, and, moreover, it obviates the employment of liquid manure. The operation of top dressing is a very simple one. With a blunt stick take out all the soil as far as you can well reach without disturbing the roots, and then fill in as above, bringing the soil well round the collar of the plant, and allowing a sufficient quantity for the waste which will take place in the first watering and by the sinking of the soil. After this is done I replace the pots on the stage as they were before, and then gently give them a good watering. After they have remained in this position for a week or a fortnight, I then change the set of the frames, putting them towards the north. I prefer waiting to perform this change until a week or two have

elapsed, for two reasons:—that I think it well, just after the top dressing, that they should have a little of the morning sun to encourage them into starting; and because from the dryness of the soil, some is sure to be washed off the pots on to the shelves and to disfigure them (for I hold that uncleanness is a dis-sight to the best stage of Auriculas that ever was grown), whereas by leaving them for a week or two the surface becomes settled, and when the frames are moved the shelves or bars can be cleaned, and the stage be quite tidy for the blooming season.

From this time forward the amount of watering must depend greatly on the state of the weather. If it be dry they will require it for the next week or two about three times a-week, and after that a little oftener, until, by the time they are throwing up their blooming-stems, they will take it every day. And by watering I do not mean dribblets of water, but one that will soak well the soil; nothing being more injurious to any pot plant than the ball being dry and the surrounding soil wet. It may seem that these are very simple directions, but I have invariably found that it is these simple things that are omitted. In directions for culture a writer imagines everybody must know such things, whereas, in truth, they are the facts about which beginners wish to get information—*e.g.*, the other day I received some nice young plants of Pelargoniums, and had to repot them. In vain did I search plenty of calendars for the sized pots required. I found Mr. Keane's directions not to overpot, and another not to stint. I could, of course, make my guess, but a beginner would not have known whether a seven-inch, eight-inch, or ten-inch pot was the size required.

I wonder how many readers of THE COTTAGE GARDENER are growers of this most aristocratic and refined flower; for it is, comparatively speaking, a scarce one, and in the south of England especially so. I know of but one nurseryman who, in these southern latitudes, sells them—Mr. Charles Turner, of Slough, and, as far as I know, in this large county (Kent), I am the only private grower, and my stock is but a little one. This arises from the slowness of increase, and from the unaccountable way in which the plants sometimes go off, though I firmly believe that attendance to plain and simple rules will pretty certainly insure health and vigour to a "stud." It used to be the fashion to give them all sorts of nauseous compounds—exciting them into growth, but laying the seeds of premature decay, as surely as when Master Augustus Fitzarthur takes to the "weed," goes out to drinking parties, associates with "hossy gents," and becomes a fast young man, when he ought still to be eating his bread and butter, and drinking tea in the school-room. Nor is the Auricula a flower whose lists are largely increased by new varieties, it being exceedingly difficult to meet our very fastidious requirements. As a proof of this, I may mention, that flowers that won prizes forty years ago, are winning prizes now; and that one of the most successful raisers of seedlings—Mr. George Lightbody, of Falkirk, who has been at it for thirty years, has not introduced more than a dozen varieties to the lists. Scotland seems to be a-head of us in this, as in many other florists' flowers; and some of those very persevering growers are bringing before us new and striking varieties.

There appeared in the March Number of that very admirably conducted illustrated book, the "Floral Magazine,"* a drawing by Mr. Fitch of Volunteer; and in the January Number of this year of the "Florist," another by Mr. Andrews of North Star—two new seedling selfs, raised by a hitherto-unknown grower, a Mr. Richmond. Of the merits of the flowers themselves I cannot speak, not having seen them; but in the drawing they look tempting enough, and are evidences, we may hope, of a growing interest in this flower. I should rejoice to see that interest increase, so that we might have a national Auricula Show, as we have of Dahlias, Roses, Carnations, and Picotees, &c.; and, indeed, I have now a letter before me urging me on that point. We might obtain subscribers, but the difficulty is to get flowers; and an Auricula Show without Auriculas would be, indeed, Hamlet with Hamlet left out. Oh, that we could inoculate some "decoratives" with a love of them! they might experience, if not too old and hardened, a new sensation. What they miss who have never knelt before the lovely "Maria!" or enfolded her scarcely less lovely sister "Sophia" in their arms! who have never been in the society of the "Duke," or on speak-

ing terms with that green (not simple), old man, "Lord Palmerston!" Let those whose eyes have been jaded by the continued sight of scarlets, blues, and yellows, as glaring as the costume of the overdressed madame of Whitechapel or Bethnal Green when down for a Sunday at Margate, just run down to Slough in the month of April, and see what a treat a really good stage of Auriculas is, and I think they would return with a desire to dabble in them.

The rarer kinds are, of course, expensive, as in Tulips; but then good ones can be procured at a very moderate rate, and with a tolerable amount of care will yield a treat not easily exceeded. They have been divided by the fancy into four classes—selfs, green edges, grey edges, and white edges, the first being all of one colour. In the others, the lobes of the petals are edged with green, grey, or white, with a ground colour of sometimes the intensest black, at others of a bright chocolate, and again of the most lovely violet. When these are carefully disposed as to colour and height throughout a frame, they form a sight quite unique in the domain of floriculture. For the encouragement of any who may wish to try their culture, I append a list of a few in each class, robust in habit, and at the same time pretty in appearance:—

SELFS.—Spaldry's Blackbird, very dark; Smith's Mrs. Smith, very dark; Martin's Mrs. Sturrock, bright crimson shade; Netherwood's Othello, black; Lightbody's Meteor Flag, bright blue.

GREEN EDGES.—Ashton's Prince of Wales; Dickson's Matilda; Oliver's Lovely Ann; Howard's Lord Nelson.

GREY EDGES.—Waterhouse's Conqueror of Europe; Pearson's Badajoz; Fletcher's Mary Ann; Fletcher's Ne Plus Ultra.

WHITE EDGES.—Taylor's Glory; Hebworth's True Briton; Lee's Earl Grosvenor; Popplewell's Conqueror.—D.

VARIEGATED HYDRANGEA LEFT UNPRUNED.

I HAVE neglected to cut back my plant as I was directed to do in a query answered for me in December, 1859, and my plant is now straggling, and the shoots are pushing nearly 2 inches long. I shall be obliged by information if I can propagate by the young shoots, and prune it back as directed in 1859. If I can put out the cuttings for propagation, should the cuttings be put into a moderate hotbed; and what kind of compost should be used for them? Also, will the cuttings require a bell-glass over them?—M. F.

[Cut or prune your plants as you propose. Every cutting 2 inches long will make ere long a nice plant. Keep a little bit of the old wood at the base of the fresh shoot. Insert them round the sides of pots—say 4 inches in diameter, half filled with drainage, and then with compost one part loam and two parts sand, and plunge in the hotbed, but put no bell-glass over them. In a month shake some of the earth from the old plant, and repot in loam, with a little leaf mould.]

FORCING.

(Continued from page 286.)

HEATING A HOUSE BY HEATED AIR

COLLECTED in a chamber round the furnace, called Kidd's system by Mr. Beaton—and the main features of which are a very secure fireplace, a damper in the neck of the chimney to prevent the heat escaping there too freely, an opening from the chamber into the air-flue which goes into the house, and means for letting in the external air into the chamber at will—will, I have no doubt, answer admirably for moderate-sized single houses, so long as the furnace is all gas and smoke-proof; but in houses of large size and of great length from the chamber, the air-flue for the heated air will be pretty well as expensive as a common flue. The ability to moisten the heated air in the chamber, and the means of freshening it from the outside atmosphere before it gets into the house, are good points. But on the whole, when much is to be done there is nothing equal to hot water; and where economy in fuel is an object, a flue from the boiler may pass through part of a house, or heat a house separately.

CONSTRUCTION OF HOUSES.

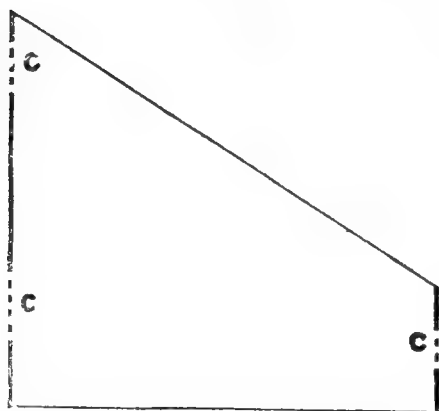
I will not enter farther on this topic than to say that *fitness* for the object contemplated does not at all depend on expense or fine workmanship, though, of course, the last

* *The Floral Magazine*, by Thomas Moore, F.L.S., F.H.S., Secretary to the Floral Committee of the Royal Horticultural Society of London. The Drawings by Walter Fitch, F.L.S. Lovell Reeve, 5, Henrietta Street, Covent Garden.

is most pleasing to the eye. The walls of a house may be of fine Bath stone, and the sashes and woodwork of the best workmanship, with a roof all in moveable sashes: but another house of a similar form, with posts and boards instead of walls, and larch poles cut up the middle for rafter sash-bars, and these fixed to back and front, and glass laid across from one to the other, will, whilst the house lasts, answer the purpose as well as the other. Even on the score of retaining heat there will be no great difference; for a wall of one-inch boards, especially if tarred and sawdusted, or covered with asphalt, will be pretty well as warm as a brick or stone wall. The matter of fixed roofs without moveable sashes, and using wide squares of glass between rafter sash-bars—say ranging from $1\frac{1}{2}$ to 2 inches in width and from 3 to $4\frac{1}{2}$ inches in depth, is one of the greatest strides in the way of economy in modern hothouse building. The one great thing to be thoroughly secured in such houses is

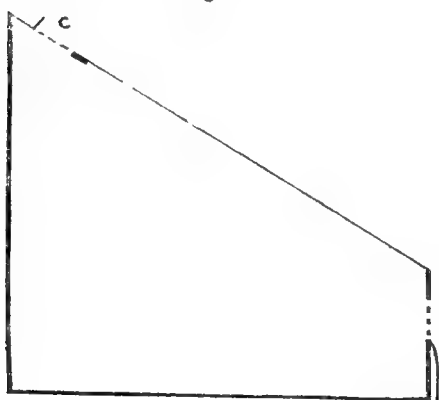
Ventilation, and especially at the top of the house. In building a lean-to house, whether the walls be of brick or wood, it is easy to arrange for thorough ventilation by leaving spaces

Fig. 28.



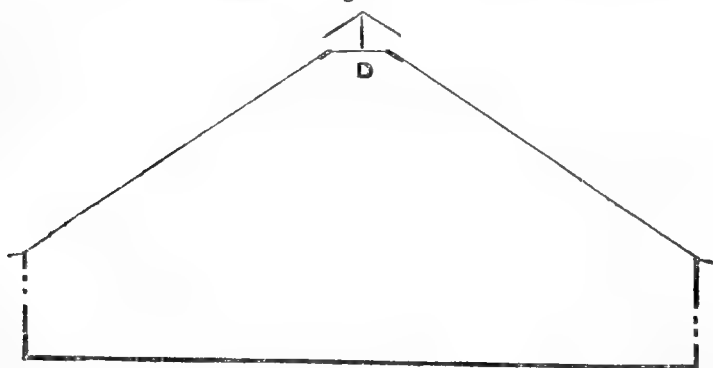
square along the top should be made to open, either by hinges,

Fig. 29.



between the ridge-boards every 3 feet or so. These ventilating-boards are hung on pivots, the pivots being fixed to about one-

Fig. 30.



third of the width of the board, so that, when a holding-nut is removed, the board falls down by its own weight. From this cross-piece an upright piece of wood, with the help of a slighter piece from the ridge-boards, supports a cowl of two boards, which protects the opening from wet, &c., and allows the air to enter at the sides. Air may be given in front by moveable sashes, by shutters in the wall, by a board on hinges in wooden houses—one of which will be necessary as the season gets on; but the

top air is the great thing in early forcing—in fact, where fuel was scarce we have frequently cut early Grapes without once opening the bottom sashes. A very small opening, given at the highest point of the roof, will not only let out the contaminated air, but admit fresh, which will soon circulate through all the house, and, being admitted at the highest part, it will be heated and moistened before coming in direct contact with the plants.

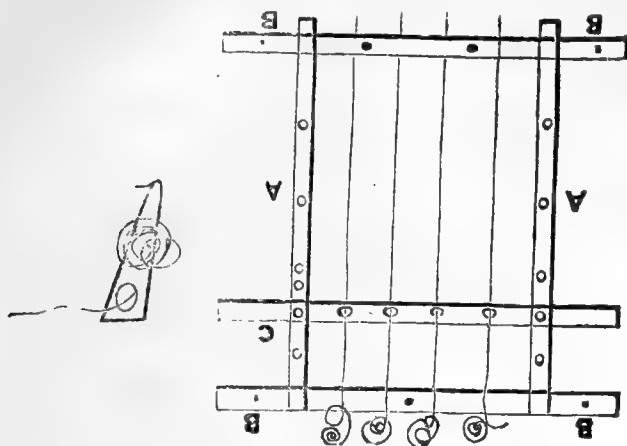
I am well aware that a great authority (Mr. Rivers) in his wide span-roofed orchard-houses, adds even to the economy of such houses by dispensing altogether with openings for air at the ridge of the roof, and finds he has enough by giving it liberally at the two sides and an opening at each end and over the doorways, through which, he says, the heated air pours out in a stream in a warm day enough to turn a windmill. Be it noted that these houses either are somewhat short in length (from 30 to 50 feet), and thus these end openings prevent the heated air accumulating at the ridge; or, if long as well as wide, the height is low in proportion, and the trees grown are chiefly in pots or as dwarf standards, so that the tops of the trees even do not reach near the ridge—at least, that is my impression. Note further, that when air is freely admitted at the sides, it is either to retard vegetation in the spring or to prevent too much sun heat affecting the plants in summer. In such circumstances I can at once see the propriety and usefulness of Mr. Rivers' plan in houses where, besides the protection of the glass, the trees have no artificial heat given. In a forcing-house on a similar plan, if the house was of any length and the trees—such as Vines or Peaches, Cucumbers or Melons, reached the apex of the roof, not only would there be danger of scorching in the middle of the house, but the cold air would be admitted at the coolest part of the house; so that whilst the top of the plant was in Africa, the lower part might be almost in Iceland. Of course, modes might be taken to bring the air over the heating medium before admitting it into the house, and thus heat it previously; and though that would always be desirable in front air in a forcing-house, its direct necessity is obviated by the means of giving air at the highest point, and proportioning the amount to the state of the weather and the heat inside the house. "A THINKER," who has desired me to clear up the seeming inconsistency between previous recommendations and the practice of such a man as Mr. Rivers, will see that the two circumstances not only admit but require different treatment.

In forming economical fixed roofs by using fixed rafter sash-bars—says rafters $1\frac{1}{2}$ inch wide, instead of making a rebate for the glass, it will be cheaper to fasten a piece of deal along the centre with tacks, half an inch thick and half an inch wide, which will leave half an inch on each side for the glass to rest on. In glazing the laps should not go much beyond an eighth-of-an-inch, or at most little more than from one-fifth to one-quarter of an inch. When a very high temperature is needed in winter, we would putty or use thin strips of paper like lead or Indiarubber between the laps; but in all other cases we would place the glass as close as possible, and use nothing between the laps. Very little air will be able to enter after the house has been used for a few months. Even, therefore, without puttying the laps, ventilation must be carefully attended to when large squares are used. A house now will be cheaper covered with large squares 18 or 20 inches across by 12 deep, than it could be by the little pieces formerly used.

Protecting.—Where the houses will admit of it, blinds of calico, tiffany or frigidomo, that did for shading in summer, will save fuel and keep the house more healthy in hard weather during forcing. These, however, are seldom used except for low houses or pits. When a high temperature is needed in winter and spring, a double glass roof, the one three or four inches from the other, and the air confined between, would be the best protection, and would admit enough light. For pits and frames, Russian mats are handy and often used; but even though tied they soon get littery. Tarpaulin with rough woollen matter inside would be far better. When much covering is wanted in severe weather for Cucumber-beds, &c., a calico cloth next the glass, dry hay for a couple of inches above it, and a waterproof cloth over all, would keep out as much cold as four or five mats. Straw mats also answer admirably for the purpose. They are easiest managed when made from 12 feet to 20 feet in length according to the lights to be covered, and so wide that two cover the lights, the top cover lapping over the under one for about six inches, so as to let all wet fairly down. Thus made,

the rain goes with the grain of the straw. Straw pulled out and the heads cut off before being threshed answers best. The annexed figure will give with explanation a good idea for making

Fig. 31.



them. A A, are two boards 3 inches broad and 7 feet long; B B, are two cross-pieces nailed on them. This forms the under side of the frame. Take now two more pieces the same size as A A, and nail these at the corners above the cross-pieces, and parallel or opposite to the first longitudinal pieces. You will thus have two pieces on each side, and in the open space between them; the loose cross-piece C, moves upwards or downwards as you like, and is fixed horizontally in any desired position by an iron pin passing through it, and similar holes opposite each other in the longitudinal pieces. The next thing is to fasten this frame as high as may be against the wall of a shed. The cross-piece C is to be pierced with other four holes, and through these stout cords are taken, just as long as the covers or mats are wanted to be, the ends hanging as low as the bottom of the frame, and the bulk after passing through the holes in the cross-piece C, tied with a running knot over the cross-piece B, are left as four bundles on the top to be drawn on as necessary. This frame is drawn as for a mat $6\frac{1}{2}$ feet wide, the ends of the straw being kept flush, either with the outside or inside of the longitudinal pieces A A. In order to make the mats secure at the end, a stout hazel rod is fastened to the loose ends of the cord, each being drawn tight, so that the end is horizontal and square. Small handfuls of straw are laid across on the top of the rod, which again is supported by a couple of pins in the bottom cross-piece: these parcels of straw when tied firm to the rod, and these four ribs of stouter cord, will be from one-half to three-fourths of an inch in width to 1 inch. To do this expeditiously four pins or needles of wood are made 4 inches long and 1 inch wide at the wide end (see fig. 31), and a hole is made there, in which smaller cord after being wrapped round the stick is passed through the eye. These four needles being, therefore, at hand, and yet not in the way, and every fresh layer is fastened to the last, with a twist round the central cords, and a hard running-knot tie. As the work proceeds more centre cords are let down. The cross-piece enables the operator to keep all tight and square, and it of course is lowered as the mat is nearly finished. Many with straw at command may make such mats in bad weather. They are far superior to Russian mats. Mr. Fraser, at Luton Hoo, who first made them largely on the above plan, was very sanguine about them; but

neither he nor myself found them so lasting as we expected. On the whole I prefer straw covers made also of drawn straw when it can be got, or of reeds. We generally make them of elm wood because we can get it. Deal would be better. D D D, are three longitudinal pieces $3\frac{1}{2}$ inches wide, $1\frac{1}{2}$ inch thick, and $6\frac{1}{2}$ feet long; E E, &c., are six cross-pieces nailed on the longitudinal pieces, two inches wide and three-quarters of an inch thick. This is the skeleton. Turn the frame upside down and the cross-pieces are the bottom, lay in the straw regularly as deep as the thickness of the wood when hard pressed, fasten a similar piece of wood at each end opposite

that on the lower side; for the other four spaces run a tar string above the straw, fastening it first by a tack to the side piece D,

then to the middle piece, and then in the same way to the other side piece. We used to have cross-pieces of wood above the bottom cross-pieces, but it made the cover heavier, and the cross-pieces prevented the rain running off freely; the strings are better every way. The two end pieces above as well as below are necessary to prevent the straw dropping out in dry weather, and they furnish a good hold when moving them. Some, though in almost constant use, will last several years, and then will generally only require fresh straw. Looking them over is a good job for labourers in bad weather, who manage to cut them to the right size very well.

Better than these, however, are covers made entirely of good red deal, which, half an inch or three-quarters thick, with four cross-pieces and a ledge all round an inch deep, will enclose a good body of air above the glass, and keep out a great amount of cold. I have known some which cost 7s. each, in use for fifteen years. I forgot to say that the under side of the straw cover, with the cross-pieces of wood, goes next the glass, and if fitted neatly they too will enclose a good body of air. To save the paint in taking off and putting on, a thin lath should be tacked to the side styles of the sashes.

Shading will seldom be necessary in forcing, except in Cucumber and Melon-beds, when the weather is very changeable. Any thin material will do, such as tiffany, or bunting, or frigidomo, but must be used with caution or the plants will be weakened. It is better to give more air and lessen the artificial heat. In sudden extremes from dull weather to bright sunshine, a little water just slightly coloured white with whitening may be thrown with a syringe over the glass outside the houses that seem to suffer from the sudden transition; but before that, try what syringing the walls and floors inside with clear water will do.

The soils wanted, will be chiefly fibry loam well aired but not much turned or broken previously. It is easy to lighten that with sand or lime rubbish, and enrich it with leaf mould, cowdung, or other manures. All these ought to be sweet, well aired, and well rotted, and rather dry for general purposes.

The Water should be rain water, at least soft, or made so by exposure to the sun and adding a little soda. Whenever used either for syringing or watering the soil, it should be as warm as the heat of the house. It is not good practice to heat the water by taking a portion from the heating apparatus, it is better to place water-pots in warm places of the houses, to have the water warm enough when wanted.

R. FISH.

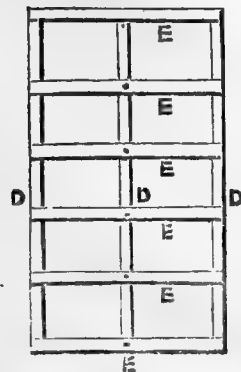
(To be continued.)

ALTERING THE MODE OF HEATING TO THE KIDDEAN SYSTEM.

I THINK of adopting as far as I can Mr. Kidd's plan in my small greenhouse, 15 feet by 8 feet, and have formed a hot-air chamber above the furnace, and enclosed in all about 7 feet in length and 3 feet in width. I have left out a brick 9 inches by 2 inches for the cold air, and have at the further end of the bed a three-inch-square opening to warm the air of the house; but my chief aim is to heat the bed of sand, 4 inches thick, for plunging pots of seeds and cuttings. What I want to inquire is, Whether the size of openings is as large as you would recommend? and also, Should the sand be kept thoroughly moist at 80° ? Would you recommend a cold-air drain, or opening, in the brick wall forming the chamber inside the house? By trying lighted tobacco-papers at the cold-air opening the smoke is as often driven out as in. How can this be obviated? ELIZA.

[You deserve encouragement for your ingenuity. You have partly solved the question against working the system on the level. But having the flue for the greenhouse, we would not attempt an air-opening out of the hot chamber into the greenhouse at all, but confine the use of the hot-air chamber to the cutting-bed alone. As you will want flue heat for the greenhouse very seldom after the beginning of the propagating season, you had better save or economise the bottom heat as much as possible, so that a small fire for a couple of hours of an evening may serve for the next four and twenty, which will be about your general run if you have already obtained a bottom heat of 80° . Then, when you want stronger fires for the greenhouse you will need a larger opening for the cold air on the outside; and to work that opening on the principle of a cottage oven in a cottage range to open, half open, or to close the oven door

Fig. 32.



so as to regulate the heat. Sand is cleanest over a tank, and your hot-air chamber differs nothing in principle from the close tank system. But sand is most treacherous for plunging cuttings in; it parts soon with moisture, and is then a non-conductor of heat. Of course you will need a frame and glass over your cutting-bed in the greenhouse to get it to work properly. If it were in a Calcutta or Indian Orchid-house you could do without a frame, with bell-glasses only for cuttings; as all sorts of stove and hotbed seeds vegetate better, and do with less trouble when sown on the open soil thus heated in a hothouse. In 1837, 1838, and 1839 we had all the Pea and Bean-wort seeds of the province of Venezuela, and all the Convolvulus and Bindworts round the girth of the saddle of Caraccas, proved exactly in that way—the easiest way we know of; and Mr. Knight was at the same principle then in the Exotic Nursery, and that was the way he raised the first *Ipomæa Learii* in 1837. Our bottom heat was from a small enclosure, where a lot of hot-water pipes joined, and our bed we could not keep under 90°, though it stood near the centre of a large stove-house.]

PINK FORCING.

THE Pink is an invaluable plant for cut flowers and for greenhouse decoration in the three first months in the year; and in order to obtain a good supply of blooms it is of the greatest importance to know the best mode of cultivation with the least cost of labour, as many of our employers have a propensity to increase the labour rather than the number of labourers.

I will very briefly state the method we have adopted, which has been crowned with success. Having had some tolerably good plants in the open ground, they were carefully taken up December 4th, with a good ball of soil about them, after which they were potted in 32's or six-inch pots, care being taken not to injure the fibrous roots of the plants. After giving them a judicious watering, they were placed on a shelf in a small forcing-house as near the light as possible, where the temperature ranged from 55° to 60° by night, and allowed to get as high as 70° by solar heat. The after treatment was confined to keeping them well supplied with water, an occasional sprinkling with the syringe, and fumigating on the appearance of green fly.

When the flowers began to expand they were removed to a cooler house to prolong their duration of blooming, and about February 10th they were opening their flowers, and perfuming the house with their agreeable odour.

The number of blooms averaged about thirty-six on each plant; but, of course, if large flowers were required it would be useless to adopt this plan; but where number is considered rather than quality, I should think it both a cheap and good mode.—A MEMBER OF THE TRY COMPANY.

DUMONT'S INSECT POWDER.

WIREWORMS IN POTS—WALTONIAN CASE—ROOM BIRDS.

THE correspondent who mentioned Dumont's Insect Powder to the Editors of *THE COTTAGE GARDENER*, is very happy to give any information that she can about its use.

She has used from May last year to the present time about half one of the sixpenny balls, and this has been chiefly for Balsams, Roses, and Carnations—five or six dozen pots in all, also a few bulbs and Geraniums; but the latter were never very much affected, as they were kept clean and well washed, according to the valuable advice in the "Window Gardening for the Many."

The powder should be dusted on when the foliage is quite dry, and it does not need to be washed off. Indeed, by remaining about the plant, it apparently prevents any recurrence of the disease. Some of the plants that were exposed to rain, or sponging, required a second application later on, after a short accidental season of neglect. There is not the slightest unpleasant smell, or any disfigurement of the foliage, and the powder is said to be warranted "only injurious to insect life." The writer believes it is sold at all oilmen's. She saw it advertised, she thinks, by Hadrot & Avril, in the City, whose name is on her ball.

The writer would be very much obliged for some information as to the plants she may keep in a window nearly due north. A second south window in the room throwing across a fair amount of light, but no sunshine. The whole place is, however, very open and light. In the south window she keeps plants just

coming into blossom; but her large heated plant-case stands in the north window, and she does not know what things she may safely bring on in an atmosphere of 60° to 70° generally, and so shaded. The heat, too, is very moist, and some of the cut-down Fuchsias, and so on, not yet started, look mouldy. Would the *Adiantum*, or Maiden-hair Fern, which has lost most of its fronds this winter by damp, do in that case now? Before, it seemed to be both damp and cold that injured it. Is there any preparation—ammoniacal, or any salts, for instance, that would destroy wireworms and prevent them in pots without hurting the plants? They have appeared in one or two cases, and it seemed they were in the soil.

If these inquiries are not already far too numerous, the information especially wanted about birds would be as to the number and kind to be put into the same cage for breeding; the cages being about 3 feet long by 1½ foot wide and high. Of cocks, the writer has a beautiful crested Canary, dark Canary, Goldfinch, and Bullfinch, one of each; and of hen birds four light-coloured Canaries, one Jonque, one Goldfinch, and one Bullfinch, but she would be glad to get others if she knew what sorts would be best to be with those she already has. One set might be loose in the room very well, if necessary, while building, in case more than one nest in a cage is likely to lead to broken eggs and torn nests; but, perhaps, it may be safe to allow two or three nests in the same cage? and on this point any hints would be most valuable.

[We feel obliged for the information as to Dumont's Powder, and we have no doubt such prominent mention will leave us at no loss where it can be obtained.

When the plants in the south window are coming into bloom they will stand longer in bloom if taken to the north window, if the south window, in fact, is made the growing department, and the north the flowering department. In winter the south would be best for both purposes; but many plants, as Scarlet Geraniums, Fuchsias, &c., could be kept at the north window in a state of comparative rest in winter.

Your heated case would be chiefly useful for raising plants from cuttings and seeds. On the whole, the young things would do better at the south window than at the north, because in bright sunshine a little shade could be given, and when not sunny there would still be more direct light. The young plants in the case will do very well at an average of from 55° to 65°. You may raise plants from cuttings of Fuchsias, Pelargoniums, Verbenas, Calceolarias, Salvias, &c., but as soon as struck you should be able to put them into a cooler case to harden off for the open window, otherwise the little things will draw or get spindly sooner than if they were at the south window. All tender and half-hardy annuals may be raised in the same way. We need not particularise more, as you have studied "Window Gardening for the Many." We do not know the construction of your case, but if the heat is too moist, you must keep the whole drier and prevent the steam rising. Some have a vapour-pipe, and that may easily be corked. Air should also be given, however little; and if the top is moveable it should be turned topsy turvy, to prevent the condensed moisture dropping on the tiny plants. Moveable large squares of glass are thus the best tops, because you can easily turn them so as to put the lower side of the square uppermost. If still there is too much tendency to damp, leave a little air on, if only the one-sixteenth or one-eighth of an inch all round, and even throw a cloth over all at night to prevent the moisture condensing against the inside of the glass. From the mouldiness we presume your case has been too damp and close, and those remedies will do away with all these evils. The true British Maiden-hair Fern loses most of its fronds in winter. It will probably push freely in such a case, but before you see the young fronds appear keep the soil a little moistish but not soaked with water; and to prevent damp falling from the glass, place a bell-glass or a small paper funnel over the crown of the Fern.

We have found no remedy for wireworms but closely examining the soil, and sticking into the soil pieces of fresh Carrot or Turnip. They will burrow in them, and by examining the pieces every morning you will soon clear the place of them.

Birds.—We know little on this subject practically; but to show our anxiety to oblige we have consulted an humble enthusiast and a very successful breeder, and though we could easily make a long article or a volume out of what he has told us, as he is full to overflowing on the subject, we must content ourselves with the following:—A crested cock and a crested hen will produce a bald-headed progeny, only one should be crested,

The younger the cock, if an early bird the previous season, the healthier the progeny. No one pair should mate a second season. The cock or the hen should be exchanged for another. It is next to impossible to breed Goldfinches in-door when pure. There is no difficulty in obtaining hybrids between the Canary and the Goldfinch. In all such mixture of races between Canaries, Goldfinches, Bullfinches, Green, Grey, and Red Linnets, &c., whenever the hen begins to lay, the cock must be barred off from the nest, or he will break the eggs. He will feed the female whilst sitting between the bars, but could he get inside he would most likely pull the nest to pieces after destroying the eggs. Only one pair even of the same kind must be in a cage—unless divided, they will be sure to quarrel. In a room you might place a dozen pairs of Canaries with a tree in it, and they will pair and build contentedly—and a pretty sight it is, and the larger the room the better they like it, *but in a cage* they invariably quarrel. Our informant raised eighteen fine birds (Canaries) from one pair last season, and then destroyed four eggs late in the summer, as he did not wish to exhaust unduly the hen bird. Perhaps some other friend will assist our lady correspondent.]

NEW AND RARE PLANTS.

CETRADENIA GRANDIFOLIA (*Large-leaved Cetradenia*).

Nat. Ord., Melastomaceæ. *Linn.*, Octandria Monogynia. It has been called, also, *Plagiophyllum grandifolium*. Native of Mexico. It is pretty, and the leaves are purplish-red underneath.—(*Botanical Magazine*, t. 5228.)

TILLANDSIA PULCHELLA (*Delicate Tillandsia*).

Nat. Ord., Bromeliaceæ. *Linn.*, Hexandria Monogynia. A common West Indian epiphyte, growing on the trunks of trees. Its beauty arises from bright red sheathing bracts.—(*Ibid.*, t. 5229.)

PENTAGONIA WENDLANDI (*Wendland's Pentagonia*).

Nat. Ord., Rubiaceæ. *Linn.*, Pentandria Monogynia. Native of Central America, but the especial locality unknown. Flowers creamy white and inconspicuous, but “even a young plant makes a fine appearance with its dark green and ample foliage, some of the leaves being a foot and a half long.”—(*Ibid.*, t. 5230.)

CHENOPODIUM PURPURASCENS (*Purple Goosefoot*).

Nat. Ord., Chenopodiaceæ. *Linn.*, Pentandria Digynia. It has also been known by the specific names *punctulatum* and *leucospermum*. The common *C. bonus-Henricus*, or Good King Henry, is known as a substitute for Spinach, but it is much less known that “its seeds are used in the manufacture of a substance formerly much in demand—*shagreen*.” The present is “a hardy annual, well worthy of a place in any flower-border, on account of the fine red purple colour of its stem, its inflorescence, and the variegated (green and purple) of the floral leaves.”—(*Ibid.*, t. 5231.)

CUPHEA JORULLENSIS (*Jorullo Cuphea*).

Nat. Ord., Lythariæ. *Linn.*, Dodecandria Monogynia. Called also *C. eminens*. “The finest of all the known species.” Native of Mexico on the volcanic mountain of Jorullo. Its calyx (for there are no petals) is scarlet tipped with yellow.—(*Ibid.*, t. 5232.)

CALOPETALON RINGENS (*Ringent Calopetalon*).

Nat. Ord., Pittosporaceæ. *Linn.*, Pentandria Monogynia. Native of Swan River. A pretty greenhouse climber. Flowers golden red in a corymb. Blooms in November.—(*Ibid.*, t. 5233.)



RIBBON-BORDER.

I HAVE a border 150 yards long and 4 feet wide. It runs along a wall with a south aspect. I wish to plant it with three distinct colours, and propose having Tom Thumb Geranium along the back, Alyssum variegatum in the centre, and Lobelia speciosa in the front. Be so kind as to pass your opinion on my choice of plants.—G. H. G.

[Yours is the most sensible question we have had for many a day to enable us to be useful in arranging a flower garden we

have not seen. Your plan is very good indeed, and it would be very difficult to plant a better arrangement of contrasts, and yet it will not do, nor please you, unless the Tom Thumbs are all very young plants—that is, from late last-autumn cuttings that have not been encouraged to grow much yet. The reason is, that strong old plants would grow too tall in the back row for the size of the Alyssum. It is a sure sign of the poverty of designing to see high steps and low steps in that style of planting.]

RIBBON-PLANTED BEDS.

“A SUBSCRIBER” would be obliged for advice for planting four beds opposite a country house, 4½ feet by 10 feet each. It is wished to plant them in ribbons, should the stripes go round the border thus , or in parallel lines thus ? Would you oblige, also, by advising as to the prettiest mixtures for the ribbons? Is it best to cut down the Laurustinuses which appear killed by the frost, or is there any hope of their living if left?

[Flower-beds will never make ribbon-borders, no matter what their size or shape, and representations of ribbons can only be given with flowers in long continuous rows, and each row of one colour, not a mixture. In planting beds all you can do in imitation of ribbon planting is to have three or more good-coloured flowers, and each kind of flower or plant to be in a separate part of the bed, not mixed, as in a circle, for instance, the middle of which to be a clump of some Scarlet Geranium, then a band of some other flower round the clump, or a row or couple of rows of Calceolaria, another row or band round that of some variegated plant, and some dwarf dark or dark blue edging all round the whole. That is the nearest touch to ribbon planting. We cannot choose the plants for ribbons or beds; we merely tell if those that are chosen are of the right colours, sizes, or suitable. Do not prune the Laurustinuses until they begin to vegetate in April.]

TO CORRESPONDENTS.

AILANTHUS SILKWORM (*M. S. C.*).—Eggs of that silkworm (*Cynthia Bombyx*), may be obtained from M. Guesin Meneville, No. 4, Rue des Beaux Arts, Paris (postage paid).

SOWING AND MANURING ONIONS (*T. M.*).—We never manure the ground at the time of sowing Onions; for we sow them on plots that have borne Celery or some other crops that were richly manured for. We sow in March. We give liquid manure (house sewage), once or twice a-week. By this culture we have grown the Madeira Onion nearly 18 inches in circumference.

BIRD-CAGES IN COOL GREENHOUSE (*Canary*).—No injury would arise to the birds. The carbonic acid gas exhaled by the leaves at night is not in sufficient quantity to be detrimental. It mixes with the air and never accumulates.

MOWING GRASS INTENDED FOR PASTURE—HEATING PEACH WALL (*A Constant Reader*).—As it has been laid down three years, and if the grass is mown before its blooming is over, we do not think it would injure the dwarf grasses to take a crop of hay from the nine acres. A three-inch pipe, with the flow along the front and the return along the wall, would give heat enough for your Peaches, the wall being 100 feet long and 12 feet high, and the glass only 7 feet from the foot of the wall.

WHICH IS THE BEST LIQUID MANURE? (*A Subscriber of Many Years*).—We do not expect to be able to answer this question until the era when some disciple of Paracelsus discovers a remedy that will cure all diseases. Urine diluted with five or six waters, or house sewage, which is better as including the drainage from sinks and waterclosets, is excellent for flower-beds, and especially for Roses, and may be applied all the period of growth from early spring to late autumn. Soot, properly diluted, may be similarly applied. Guano is as good for the purpose as house sewage, but not better. Bone dust is good pointed into the surface of the soil. Sheep's dung makes good liquid manure, but is not so powerful as either house sewage or guano. If the sinks and waterclosets all communicate with the liquid manure well, it will need no diluting—at least, we never mix with it any water. In conclusion, we will add the expression of our conviction, that for the generality of soils and crops there is no liquid manure equal to house sewage. For potted plants, especially if softwooded, we use it much weakened with water, and not oftener than once a-week. A knowledge of the soil, and of the plant and its health, is needed before any one can say what manure will probably be the most suitable.

CLIMBERS FOR GREENHOUSE (*Nottinghamensis*).—We abide by our list. The Mandevilla and Rhynchospermum are sweet-scented. It is usual to state the heights in books which you have copied, but we have grown them double those heights. Dolichos lignosus is almost continually in bloom. If you wish for taller climbers omit it, and have Clematis cœrulea grandiflora and Passiflora Colvilli.

VINES IN POTS (*A Subscriber, Aberdeen*).—The Vines will fruit well in pots from 12 to 18 inches in diameter. We would advise fully three parts loam to one of leaf mould. But if you wish to fruit them this summer, it will be bad policy to attempt repotting them; but you can scrape an inch or two carefully from the surface, and replace with rich compost.

ERRATA.—Page 311, line 18, for “groves” read “grooves.” Line 22, second column, same page, for “2½ inches” read “2¼.” Page 312, third line, for “pieces” read “lines.”

TURF SODS AND STABLE MANURE UNDER COVER (*J. Williams*).—You could not well have a better place for your turf sods in winter; but if the dung is two or three years old, it will not be of much use except for chopping up with the sods. We would prefer the sods being in small mounds out of doors in summer in your yard, and then remove a portion to the stable before winter. We have little room for this purpose, but we always keep some under protection. In the open air we build such sods into narrow beds 1 yard wide and 4 feet or more in height, drawing them up to span roofs, and that keeps them dry.

EVERGREENS FOR A TRELLIS SCREEN (*C. Hughes*).—The first thing to do for a blind screen of evergreens such as you contemplate is first to open a trench 20 inches deep, or, if the soil is ordinarily good, to trench it to that depth and to the extent of 4 feet in width; to add some rotten manure to the soil in the trenching, and to wheel or cart away part of the soil if it is very sandy or of stiff clay; then to fix your stakes in the hard ground at the back of this border, but so near to the loosed part that the plants planted out at the back of the border can be easily trained up to the wooden fence or stakes, or whatever the retaining support may be. No preparation for a screen fence should stop short of all this. Along close to the bottom of the fence, or back of the border, plant Irish Ivy out of pots at 2½ or 3 feet apart. It can be had up to 7, or 8, or 10 feet in length in the nurseries, and it might be planted a foot to 18 inches apart, so as to cover the whole fence in on one day—the day it is planted. Five years back we covered a seven-foot wall from end to end in one season just this way. About 1 foot from the bottom of the fence plant a row of the *Felicité Perpetuelle* evergreen Rose at 5 or 6 feet apart, or alternating with every two plants of Ivy, as we have been advising every other season since 1849. These Roses are to be fastened up to the front of the Ivy, and to be always tied loosely to the front spurs of the Ivy; and when they are sufficiently long and strong in the branches bud all manner of Roses on the *Felicité*, as you read last week out of Mr. Rivers' "Rose Amateur's Guide." If the Roses and the Ivy are planted in a good border the same season they will never interfere with each other, and a whole generation of Roses might thus be had across the stable-yard, or anywhere save in the middle of a wood.

SEEDLING CINERARIAS (*E. T.*).—All came quite dried up. Trusses should be sent in a box, with damp moss about them.

SOWING SKIMMIA JAPONICA SEEDS (*H. B.*).—Yes, a Waltonian Case is just the place for getting up the seedlings of *Skimmia japonica* in about twelve or fourteen days; and as the seedlings are extremely slow growers, you may leave the seed-pots in the Waltonian Case till June or the season is sufficiently warm to do without it. If you sow now, midsummer or the 1st of July will be soon enough for you to pot off the young *Skimmias*. Put them into light sandy loam and peat, half and half, and put six of them in round a 48-sized pot, put them into the Waltonian again, keep it shaded from the sun, and keep the air damp but use no artificial heat—only the sun morning and late in the afternoon, give them all the sun in September and October, and let them remain in the Waltonian all next winter, and without heating it, if it is in a greenhouse or in your dwelling. When you want to begin propagation in the spring of 1862 the *Skimmias* might take their chance anywhere, for they are just as hardy as the bush Birches in the Highlands of Scotland. But after the propagation of 1862 is over you will have to pot them singly, and keep them rather close and as hot as the sun can make them, with shading and moderate dampness all through the summer of 1862, and you will gain thus one season's more growth out of them in two years by a proper use of the Waltonian; but recollect, and never forget it, that no other plants from seeds must be in the Case with them, unless they were of the very thick leathery-leaved *Rhododendrons*, which do and indeed require the same treatment as this extra way of overcoming the very slow progress of the *Skimmias*.

PEACH TREES UNDER GLASS (*A Novice*).—Whilst in bloom give the trees from 48° to 55° at night, according as the weather is cold or warm. In the daytime raise gradually 5°; by sunshine may allow from 10° to 15° more. Do not syringe until the bloom is set. Prevent the roots being dry, but do not soak them too much whilst in bloom. It is singular to have pipes in a conservatory and no means of heating them. If you sink the boiler low enough the plan will do; but the boiler must be considerably lower than you say, or you will burn the trap door unless it be iron. If the conservatory was small and the pipes not there, we would as soon use a stove at once; but we know too little of your circumstances. See "Doings of the last Week" for much of what you inquire about.

POT-ROOTS OF DAHLIAS (*N. H.*).—Pot-roots are the roots or tubers of cuttings of Dahlias made in the summer or late in the spring, and kept in pots the whole season. These are always more easy to keep in winter than ground-roots—that is, those planted in the usual way. *Zelinda* is the best purple bedding Dahlia. Who will tell us the best yellow?

PASSIFLORAS PALMATA, RACEMOSA, AND BILLOTII NEGLECTED (*J. Williams*).—Every well-ripened bud on the *Passiflora* shoots will produce a shoot next summer that will produce bloom, if there is strength enough in plant and roots. You may prune as soon as you like, and keep this in mind, when your plants are regularly established so as to fill the space, all you will have to do every winter or spring will be to cut back the last summer's shoots to within a bud or two of the base. All kinds, when established and filling their space, prune just as you would do a Vine on the spur-pruning plan.

MOVING OLD CURRANT TREES (*B.*).—White Currants at forty years of age will transplant as easily as if they were only one or two years old, and often much better. If a White or Red Currant bush was in health and vigour, we would choose the oldest plants for our garden. We would neither cut off any of their roots nor keep much of the old earth about them; and we would plant them three or four inches deeper than they were before, so as to entice them to make a fresh set of roots from the collar or at the surface. A good mulching of littery dung the first season would help them to make the surface roots.

XANTHOXYLUM AROMATICUM (*Formerly*).—This is a fancy name; but the old Toothache Tree, which is the other name you mention, is a species of *Xanthoxylum*, and a large timber tree in the West Indies. It is of no sort of use or ornament in British gardens. But, like a plaything, if required to sow seeds of Toothache Trees it should be done exactly like sowing *Mignonette* in pots; then the pots to be treated in every respect as if they were full of Melon seeds; to pot the seedlings, and to keep them in

Melon heat top and bottom till the hotbed is too cool for them; then plunge them in a sweet tan-bed in a stove, and let the bottom heat be 80° all summer, and the top air as for Queen Pines.

TROPEOLUMS FROM SEED (*J. H.*).—Neither elegans nor any one that we know of the breed or new race from *Lobbianum* ever comes true from seeds. *Elegans*, and all of them as far as we know, are quite as hardy in their seeds as our native acorns; but out of ten thousand self-sown seedlings we have not yet seen or heard of one coming true. Tom Thumb is only a dwarf sport of the old garden *Nasturtium*, and, like that race, there are some slight variations in the flowers at times. It is simply a work of love to sow *Nasturtium* seeds in pots; for all the varieties come from sowings in the open air as sure as Sweet Peas, yet bushels of Sweet Peas are sown in pots to obtain them earlier, and *Nasturtiums* will also come earlier in pots. If you and we could keep to the plan of comparing all new things with some old-established plants, how much more easy to mind them. All present *Tropeolums* have their seeds as hardy as Sweet Peas, and none of the breeds of elegans or *Lobbianum* can yet be trusted to come true from seed. *Elegans* is the best bedder, then *Stamfordianum*, then *Triomphe de Hyris*. These are the only three fit to bed yet known.

SAND FOR POTTING (*Beta*).—The sand for mixing with soil used in potting plants is a sharp drift sand, such as is found by the side of streams. The pit sand is usually too fine and close; but some is found in the neighbourhood of Reigate that is well adapted for the purpose. It is usually white, but we have known some yellow that was very superior.

POULTRY AND BEE-KEEPER'S CHRONICLE.

POULTRY SHOWS.

MARCH 6th and 7th. PRESTON. *Sec.*, Mr. H. P. Watson, Glover Street, Preston.

MARCH 13th and 14th. PLYMOUTH. *Sec.*, Mr. W. R. Elliott, 5, Windsor Villas. Entries close March 1.

APRIL 1st and 2nd. SUNDERLAND. *Sec.*, John Littlefair, 6, Bridge Street. Entries close March 19th.

MAY 21st, 22nd, and 23rd. CHESTERFIELD AND SCARSDALE. *Hon. Sec.*, Thos. P. Wood, jun.

MAY 22nd and 23rd. BEVERLEY. *Hon. Sec.*, H. Adams. Entries close May 4th.

JUNE 4th, 5th, 6th, and 7th. BATH AND WEST OF ENGLAND.

JULY 2nd and 3rd. BLACKPOOL. *Sec.*, E. Fowler, jun.

N.B.—Secretaries will oblige us by sending early copies of their lists.

DOMESTICATED PHEASANTS.

WE will not stand upon the order of our papers, but we will dodge to suit the wishes and requirements of our friends, using only such right of selection of subject as shall require immediate attention. Thus, any review of the past will, probably, be as interesting in two months time as it is now; while the necessary advice and instruction asked by a correspondent, "AMATEUR DE VOLAILLE," who wishes to go into Pheasants at once, must be given without delay.

We have Golden, Silver, Bohemian, White, Pied, Chinese, and Common. All these are, or were, attainable. The Silver, Common, White, and Pied we have had running about. Golden are shy: if confined in a pheasantry they are pleasing birds; but if at liberty they seek to hide, and do not become attached so much to their owner. Our experience is the same with the Chinese, and we have now a pair we have had for upwards of two years. They are in an aviary with Pigeons and fowls, but, if it is wished to see them, they must be driven out: we, therefore, believe that if they were at liberty they would seek to hide. Then there is the *Versicolor*, a magnificent bird, but at present only to be had at a large price—a beautiful creature covered with feathers like those of the wings of the Japan Peacock, a rich glossy blue, or very deep green, with every feather shaded to its edges with a light metallic lustre, ending in a pale steel colour. We long for the time when this splendid bird will become common. Beauty of colour is not purchased by the loss of any property that is valuable. He is to other Pheasants what the Japan is to the common Peacock—he has not a plain feather. The Bohemian is simply curious, and prized, perhaps because it differs from others. It is like an ordinary bird washed over with cream; the plumage has a dull, heavy colour throughout. The Chinese present the greatest variety of hue and shade. The top of the head is buff, the blue of it very dark, and the white ring of the neck wide and very distinct; the breast composed of small feathers, very dark copper, and profusely barred; the side feathers of the breast cream colour sparingly spangled; the saddle and the wings a light steel blue. The White is simply, as its name implies, a white bird; but the contrast of the red face is striking. The Pied is a handsome bird if the dark plumage preponderates; but if there is much white, it gives the bird a tame and domestic appearance. The old Pheasant is a solid, well-to-do, robust,

and rotund fellow, not a bad type of his English master. He is large, strong, and bold. He has less variety of colour than these novelties, but he does not lack valuable properties. His breast and back are nearly black, he has no ring round his neck, but he weighs sometimes 4 lbs., sometimes 4½ lbs., and has been known to weigh more. It must, however, be admitted he is more appreciated in coverts than in aviaries, because he is not so marked in his plumage. Like Mrs. Primrose's wedding dress, he must be taken not for his showy appearance, but for qualities that will wear well.

There is no place in which Pheasants will not do well, provided there is a little attention paid to natural habits. They must be on the earth, except when they are perching. We will, in few words, state all that is necessary. First, all Pheasants in confinement should be pinioned, or should have their wings cut. The reason for this assertion is, that, if they have not, they will, if frightened, fly up; and the result is, they break their necks, or, failing that, disfigure themselves so much that they become pitiable objects instead of beautiful pets.

An enclosure for each pair, 12 feet square, if part grass and part gravel so much the better; a wooden-house with a perch 3 feet deep, 4 feet long, and 6 feet high, only the sides of which need be closed, the centre may be always open. In one corner there should be a heap of dust, which is essential to their health. Any sort of enclosure will do—netting, wire, or trellis-work. A small stunted tree fixed in the centre of such a pen affords a good perch and adds to the appearance very much. Pheasantries may be easily fixed against any wall in a garden, or when such conceits are pleasant, they may be cheated into shrubberies, that hide the wire, and give to the birds the semblance of being at liberty.

We will treat of feeding, &c., hereafter.

COMBS OF SILVER-SPANGLED HAMBURGH HENS.

SEVERAL of my Silver-spangled Hamburg hens and pullets have small shrivelled black combs, which appearance continues summer and winter, and whilst laying freely. Some of the original stock given me three years since had this defect, and it shows itself in every successive brood. Some of the birds are very good, both in feather and comb, and this defect now shows itself in the cocks. The health of the birds and their laying qualities are perfect, so that I do not think the feeding can be at fault. Does this arise from disease, or from breeding in and in, no fresh blood having been introduced for six or seven years?—E. C. C.

[It is a peculiarity in some breeds of Spangled Hamburgs that their combs remain dark and undeveloped like those of Sebright Bantams. Many of these birds are, like yours, perfect in every other respect. We cannot imagine that any breed can be going on well using only the same stock for six or seven years: we, therefore, advise a change. Choose it carefully from some strain where the comb is very moderate in size, and firm on the head. There are many yards where they would gladly exchange their blood-red, but loose combs, for your dark blue, leaden, but tight ones. It is no wonder that the cocks should be free from this fault, as in this breed it is seldom possible to breed perfect birds of both sexes from the same parents. In any experiment you make in the way of crossing be careful to keep some of your old breed pure. It is more than likely you may still prefer them to the altered breed.]

PARALYSED SPANISH COCK.

I HAVE a Spanish cock which, as he walks along, appears as if he was taken with a fit; also when he puts his head down to pick up his food his head turns round as if he was giddy; and when he wishes to perch he always flies over it as if he could not judge the distance. He has been fed on Indian corn in the morning, and sharps in the middle of the day, and he has a good run. One side of his white face is turning green and sore.—R. E.

[We are afraid it is a bad case with your Spanish cock. He has what we call the "gids," and birds seldom recover from them. You must purge him freely with castor oil for three days. This will make him very weak, but you will see whether it lessens the disease. You must afterwards feed him freely,

and if necessary give him yolks of eggs to eat. Your feeding has not been good enough for the severe season fowls have had to encounter. If he overcome the giddiness, give him oatmeal and bread and ale. Rub his face with compound sulphur ointment.]

FOWLS WITH ULCERATED THROATS.

THERE is a disease among my fowls, the Black-breasted Red Game, that I cannot account for, and that I never heard of before. It occurs among the chickens when about two months old; and I used to think it was confined to chickens, but I have latterly lost a favourite hen by the same complaint, and now a very high-bred male bird is affected and will be sure to die. There is internal ulceration about the throat and mouth, a watery discharge is occasionally expelled from the bill and nostrils, and the head, and bill itself ultimately, become a mass of sores. The cock has to-day, I perceive, a frothy saliva-looking matter half covering the upper part of one of the eyes.

The fowls are kept in a somewhat spacious enclosed yard, and have plenty to eat of wheat and barley, with cabbage leaves, &c., as a substitute for grass.—A SUBSCRIBER.

[Give castor oil to the fowls that are affected. Discontinue your whole corn; feed on meal. Have some large heavy sods of growing grass cut and thrown into the yard. Take away the sickly birds. Nothing but free purging will heal the ulcerated mouth. If you adopt the oil, the sods, and oatmeal, you will cure your fowls.]

EGG-HARVEST OF 1860.

FROM twenty-five hens the following is an account of the monthly produce of eggs:—January, 228; February, 280; March, 412; April, 359; May, 367; June, 320; July, 201; August, 251; September, 203; October, 103; November, 20; December, 0.

I think it a great mistake about sitting hens on seven eggs. Give them as many as ever they can cover is my rule, and I generally have success. Last year I had forty-three chicks out of three nests, fifteen each, in the month of February. I have now twelve chicks from thirteen eggs.—AN AMATEUR.

EPIZOOTIC APHTHOUS DISEASE OF THE DOMESTIC FOWL.

By T. TOMASO, Veterinary Surgeon.

THIS disease manifests itself on the comb and wattles. The apthas or vesicles are of the size of pins' heads, and of a reddish colour. Sometimes the eruption appears all over the body of the birds; they lose their appetite, droop their wings and tail, evince a disinclination to move, and about the second day the vesicles resemble pearls in shape and transparency. About the fifth day they begin to point, on the seventh day they have attained their maturity, and on the eighth they break, when a little serum oozes out, after which the majority of the birds recover. Few die after the seventh day.

Necroscopia.—The combs and wattles are found to be much swollen, and of a purple or scarlet colour. The vesicles are of the size of a lentil, some are full of limpid serum, other have dried up. In the cranial cavity the meninges are somewhat injected, and the cavity contains some serum of a reddish colour. No other alteration in this organ was perceived. The mucous membranes are of a violet colour; the tongue pale; the crop empty of food, but slightly distended with gas; the stomach contains some undigested matters, emitting an acid smell; the intestines are filled with liquid of a yellow colour, and possessing a fetid odour; the mucous lining of the intestines presents some reddish spots on its surface; the lungs and the liver are normal.

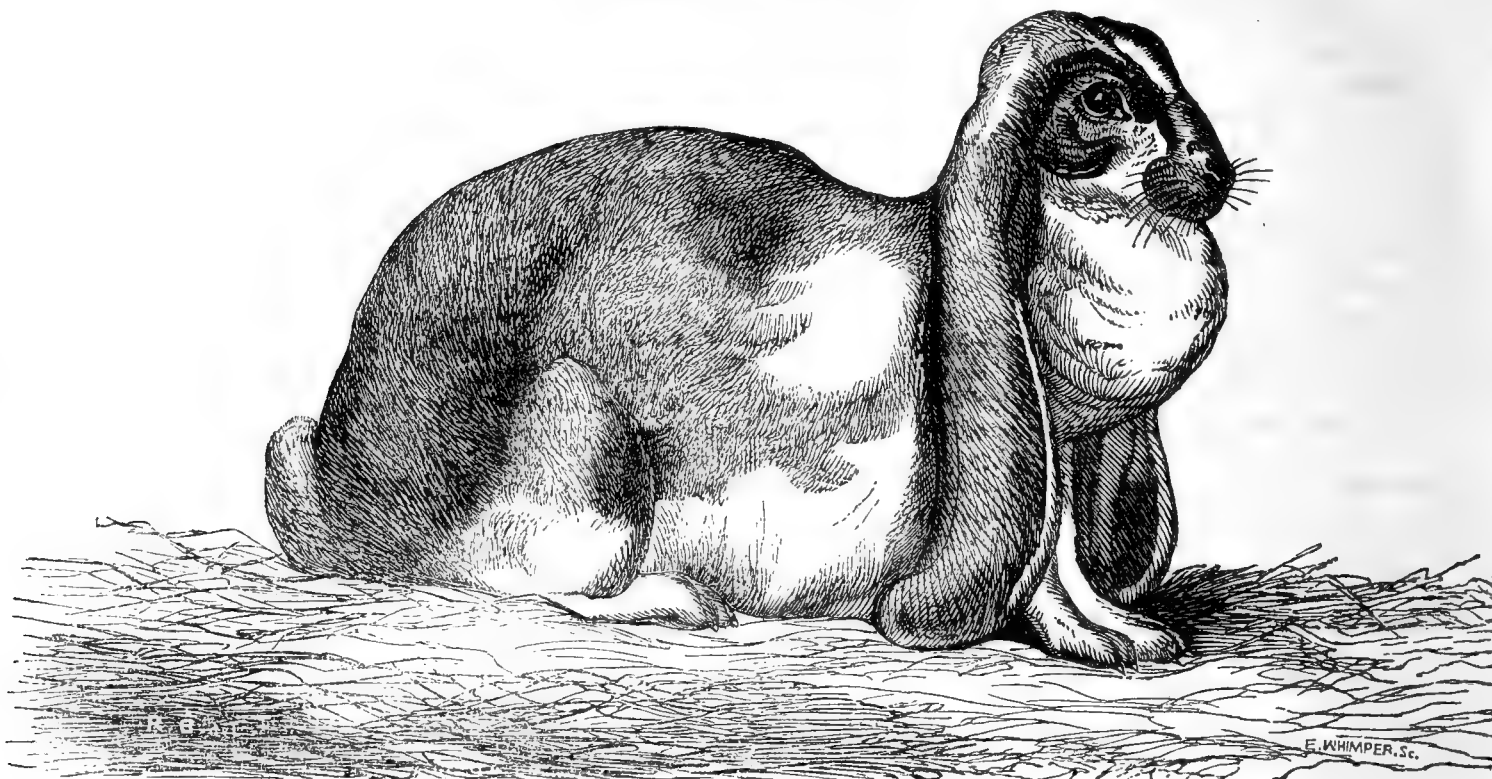
The author describes a second and third form of this disease, but they vary only in intensity. The cure or treatment consists in giving the birds, fasting, a spoonful of the following mixture:

Antim. Pot. Tart., 20 decigrammes.
Pot. Bi-Tart., 20 grammes.
Acid. Nitric., 20 drops.
Aq. Distil., 250 grammes.

For Turkeys and water-birds the strength must be somewhat increased—about a tenth part of the ingredients. The affected parts should also be bathed with ferruginous water, which

should also be given to the birds as drink. The roost, and other places where they are kept, are to be cleansed and well ventilated, and any dead birds carefully removed, as the disease is considered highly infectious.—(*Veterinarian*.)

THE RABBIT (*LEPUS CUNICULUS*).
ITS HISTORY, VARIETIES, AND MANAGEMENT.
(Continued from page 295.)



THE DOUBLE OR FULL LOP.

THE Lop-eared Rabbits are the pets of the fancy, and in breeding there are seven points to aim at.

1st, Length of ear, measuring from the tip of one ear to the tip of the other across the head. 2nd, width of ear. 3rd, colour—blue and white, black and white, tortoiseshell, yellow and white, and grey and white. The self-colours are fawn, sooty fawn, or Egyptian smuts, black, grey, and white with pink eyes. 4th, the position of the ears. 5th, size of the eye, and the larger this is the better. 6th, the carriage of body. 7th, the size.

All these properties are very fairly exhibited in the print, which is a drawing of a black and white doe with the butterfly smut well marked. Her ears are $21\frac{1}{2}$ inches, and considered a first-class specimen. The longest-eared Rabbit bred is stated to have had ears 23 inches long, but there is some doubt about it. I think $22\frac{1}{2}$ inches fairly measured is the longest ear yet obtained, and the breadth $5\frac{1}{8}$ inches.

The most fashionable colours are the black and white, blue and white, and tortoiseshell. Good yellow and whites are much admired, but are rather scarcer than the other.

The required carriage of the ears is well shown in the print, and the requisite points are these:—Both ears should fall equally, and as near to the inner corner of the eye as possible. The round or convex surface of the ear should be outwards, and the concave inside surface nearly concealed, and lying close to the face. The ear should be of a whole colour the same as the rest of the prevailing colour. It should be thick and strong, though round and narrow at its root, rapidly becoming broad, and should continue broad to the tip and not angular. The broader and rounder you can get the extremity the better.

The carriage of a Rabbit should be as follows:—Low at the shoulder, high at the rump, head resting on the dewlap when sitting, which is a double fold of skin filled with fat, and covered with soft white fur, which is seen under the chin, and begins to make its appearance when eight or nine months old.

The proper marking of a Fancy or Lop-eared Rabbit should be as follows:—The nose should be marked at each side with some dark colour, having a dark-coloured mark running up the face so as to meet the marks before mentioned, and with them forming what is termed "the butterfly smut," which is so called from its resemblance to a butterfly with its wings extended.

The eyes are surrounded with colouring which joins the ears. The chain is a line of spots at each side of the shoulder running from the ears to the saddle, which is a large patch of colour, and should be large and unbroken by any other colour—that is, if it be a black and white, the saddle should be black with as few white hairs as possible, and the same with all other colours. The saddle should be free from any but the one prevailing, and when so marked they are considered by the fancier perfect in colour.

To be good specimens they should not be less than 18 inches; but 20 inches and 21 inches are considered good lengths.

In breeding Lop-eared Rabbits length of ear is the main object, but at the same time the other points mentioned must not be lost sight of.

M. Didieux states that this breed has been obtained by Rabbits imported from China, and crossed with breeds natives of France, and called "Fancy." Fancy, he observes, does not look at prices, and he states that a pair have been sold at 500f. to 600f. (£20 to £25 sterling). M. Gerard also states he has heard of £20 being paid for a single fancy or Lop-eared female Rabbit. These are exorbitant prices, but well-formed long-eared Rabbits will bring sufficient to pay for the trouble and pains bestowed in breeding them.

To breed long-eared Rabbits you must first get your stock of a good strain; and, secondly, you must have a warm place for their reception. Length of ear is only obtained by increased warmth, high feeding, and judicious management.

These, like other animals, soon degenerate, and require a cross of fresh blood frequently, which may be accomplished in the cheapest manner by getting the use of a good buck from some well-known stock, or by exchanging or buying from time to time. In breeding long-eared Rabbits, you must endeavour to obtain quality, and not be too covetous of quantity. You cannot expect to have fine young ones if your doe is allowed to bring up more than three or four. Some does will not bring up more than two well: therefore, it is necessary to have common or Dutch Rabbits for nurses, they being much better than the more highly bred.

The best plan is to have your nurse does to kindle about the same time as your fancy breeders; and about two days after your doe has kindled, take the doe out of the hutch and look

over your young ones, taking notice of those that appear to have the longest ears and are the best marked, which are easily to be seen even at that early age. If it is the doe's first litter, and she has more than two, take the surplus number away, and if they are promising, place three or four with your nurse does—not more than four. If you notice any of the young ones spotted, it is better to destroy them at once. If you find your young doe prove a good mother you may allow her to bring up three or four young ones at her next litter, but never more, if fine ones are desired. Some does will not notice their young, and these are often the breeders of the longest-eared Rabbits: therefore, you must endeavour to have your nurse does ready to receive them.

When the young ones are about a month old they will begin to show their good points, and from this age till about eight or ten weeks, make great progress in the growth of ear; but if you find there is not much to be expected from them in that respect, it is better to wean them at seven or eight weeks old, sooner than lose more time with your doe; but if, on the contrary, they are promising, leave them with the doe till twelve weeks old. Some does will not suckle their young so long, but drive them about the hutch. When such is the case it is better to put the doe to the buck, and let the young ones remain a week longer if it has quieted her; but, if not, remove them.

At this age many of them will require a cap on the ears to get them in the required form. When capped they must be put in separate hutches, otherwise they will know the caps off each other. They will not require the cap on longer than a week or ten days, and it should be put on directly they are weaned. The ears seldom grow after four or five months old.

In breeding for length of ear it is not necessary that both parents should have ears of great length, provided they are of good blood. A nineteen-inch or twenty-inch-eared doe will prove the best breeder; the longer-eared ones are often too highly bred or forced in their growth to be of much value as breeders, often turning out barren or bad mothers. But the buck should be as long-eared as you can obtain, provided he is a good stock-getter. Very long-eared bucks will also prove barren sometimes.

In breeding for colour it is a bad plan to breed from two broken colours; it is better that one should be a self-colour, and the fancier should also know how his does are bred as to colour—that is, the colour of their parents, as they will often throw back. To get heavily-marked black and whites, a black is a good colour to breed from; for tortoiseshell, a sooty fawn; for yellow and white, a fawn; and let the other be of the colour desired. It is impossible to breed true to colour, but by judicious crossing a great deal may be done towards it.

The fancier in selecting his breeding stock should be particular in getting them free from defects, good carriage, legs straight, eyes large and prominent, and in colour heavily marked, and large size. These are the main points to be considered.—R. S. S.
(To be continued.)

THE CANARY AND THE BRITISH FINCHES. (Continued from page 296.)

7.—THE SISKIN or ABERDEVINE (*Fringilla spinus*).

German, Der Zeisig.

French, Tarin.

THE Siskin, or, as it called about London, the Aberdevine, is also known in some parts of the country by the names of Barley-bird, Black-headed Thistlefinch, or Goldwing, is in shape much like a Goldfinch, though a trifle smaller and rather more dumpy, the tail being short and the bird having a habit of puffing out its feathers. The beak, also, is sharp and pointed like that of the Goldfinch. The general colour of the plumage is a yellowish-green on the upper parts of the body, and yellowish-white beneath. The sexes are easily recognised, the male being brighter and having a black top to his head; the head of the female being greyish, the body-colouring duller, and the breast spotted. The cocks are said to increase in brightness of colour till the fourth moult. The base of the tail-feathers, as likewise the lower parts of the quill-feathers of wings are yellow, and the larger wing-coverts have a yellowish margin, which forms stripes or bars on the wings. Not much is generally known of their natural history; but they are believed to breed in the fir woods of Scotland and the north of England, and to migrate southwards in autumn. During the winter months flights of Siskins are often to be met with in the south of England, fre-

quently in the company of the Redpolls, when they frequent the alders along the banks of rivers, and at those times the bird-catchers capture them in the clapnets; but they are more uncertain in their migration than most of our other winter visitors, and, consequently, bear a higher price. Cock birds sell from 1s. to 2s. 6d., according to their scarcity or the time they have been in a cage, as many fresh-caught birds die in meating off—that is, before they learn to eat the seeds given to them, which, of necessity, are so different from what they get in their native state. They are, however, quiet birds and soon make themselves at home, and with a little attention become very tame, and seem happy, vivacious little birds, continually singing in a rather low, plaintive twitter, not devoid of sweetness, but often interrupted with the interjection *De, de, dedah!* uttered with more emphasis in a rather squeaky key.

Their contented manner and familiar ways cause the Siskins to be general favourites. They breed freely with the Canary, those I have had feeding their young as attentively as the Canaries. There seems considerable affinity between the Siskin and Canary. Bechstein asserts that the hybrid will breed again.

The Siskin Mules, at least all that I have bred or seen, very much resembled the Siskin, though a trifle larger and rather brighter in colour, and the beak a little thicker than the Siskin's. The cocks, too, had the black heads so distinctive of the cock Siskin, though not quite so jet, while the hens were more grey. The tails, also, of the Mules were intermediate between those of the Siskin and Canary.

In song, like most Mules, they were very imitative, catching the notes of nearly all the other birds in the aviary, and though their voices are not so powerful as the Canaries', yet they possessed much execution.—B. P. BRENT.

APIARIAN NOTES.—No. XI.

FROST AND ITS EFFECTS.—I have to apologise to "A RENFREWSHIRE BEE-KEEPER" for having taken hitherto no public notice of his polite request to contribute a paper on the above-named subject; but hardly knowing what advice to give, I thought it would be best to wait until the long-continued frost should break up, and since that period I find my time and attention have been too much engaged with other than apiarian matters to allow of my writing an article for the pages of THE COTTAGE GARDENER. As so much time has elapsed, I will not now say very much on the subject, as no doubt most bee-keepers have been able to satisfy themselves as to the effects of the late frost on their own bees. All the hives with which I commenced the winter, fourteen in number, are living, and, so far as can be seen, are healthy and safe. I can distinguish no difference, in point of strength and activity, between the stocks in wooden or in straw hives. The former have had no protection or covering other than a loose roof to carry off wet. The straw hives have, in most instances, been enclosed in wooden cases, yet I cannot perceive that the bees have suffered one whit more in the boxes than in the straw hives. In one of either sort, located a few miles from town, the bee-feeders had inadvertently been left on the top since November, the communication being left open, and the apertures uncemented with propolis. These rank, so far as I can judge, amongst the strongest stocks in my apiary. Neither of these had other protection than a moveable roof. The first fine day after the thaw I took the opportunity of cleaning the floor-boards of most hives. In two or three cases the bees seemed greatly to appreciate the attention; but in the majority there was but little accumulation of dirt and refuse of unsealed combs, and very little appearance of there having been considerable internal condensation. On the whole, considering the unfortunate predicament in which the majority of bee-keepers in this district find their hives, I have, in common with the "DEVONSHIRE BEE-KEEPER," reason to congratulate myself on the prosperous condition of my apiary, after as trying a spring, summer, and winter, as have probably been experienced by any living apiarian. The succeeding two months, are, however, still likely to be very precarious to the prosperity of existing hives, and we must not be too sanguine of passing the critical period wholly unscathed; yet I hope, by affording early and liberal supplies of food to those which seem to require it, to carry through the greater portion of my stock. I should fear that the hive of the "RENFREWSHIRE BEE-KEEPER," in which the thermometer fell to 25° below the freezing-point, will not have survived the frost, but should be glad to hear from him that it has done so. Such

a degree of cold within a hive I could hardly have imagined possible or compatible with the existence of the bees.

CONSUMPTION OF FOOD.—If all my hives have consumed about the same quantity of food during this past cold season as the one of which I have been enabled to take accurate notice (and there is no reason to think otherwise), it only tends to prove that the actual consumption during the winter months is less than many apiarians have imagined to be the case. The hive No. 2, which has been suspended from a Salter's balance (of the feeding of which a table was given at page 140 of the present volume), registered, on the 15th of October, 34 lbs. 8 ozs.; on the 27th of November, 33 lbs. 8 ozs.; at the close of the frost, 31 lbs. 7 ozs.; and at the present date (February 8th), 30 lbs. 8 ozs.; or only 4 lbs. of stores dissipated in within a week of four months. The result perfectly coincides with that of observations I have from time to time instituted, and tends to increase our admiration of the superabundant industry of these little creatures.

FEEDING ON THE TOP.—I cannot say that I have ever experienced the difficulty of inducing bees to take down food from the top, which is mentioned by "UPWARDS AND ONWARDS" at page 186, unless the bees were in a hopeless condition from the loss of their queen or from some other cause. Since the frost disappeared, I have fed six of my hives, both by the inverted bottle mode and by that of open feeding-pans, giving from 6 to 8 ozs. to each, and the food has been taken down in a very few hours. When it fails in a healthy hive, it is possible that the food is not sufficiently palatable. Cottagers use a feeder somewhat similar to that described by the last-named correspondent—viz., a trough cut out of a stick of hazel or of elder wood. Would "UPWARDS AND ONWARDS" kindly inform us whether he has found it necessary or advisable to cover his hives with anything further than the milk-pans during the late frigid opportunity?

NEW DEPRIVING-HIVE.—I quite agree with "A DEVONSHIRE VICAR" that the hive described under this name, at page 247, looks much better in theory and on paper, at first sight, than it would prove to be if put into practical use. If care is taken to raise the upper box pretty frequently, there would not be much danger of the combs being attached to the sides of the lower box of such dimensions as are there described; but if the too-sanguine owner should endeavour to possess himself of the upper chamber filled with stores, by dividing the combs, both he and they, as well as a large number of bees, would most certainly come to grief.

In Ireland, it is the custom among the cottagers to use a very high, narrow, conical-shaped hive, which on being nearly filled is raised successively on one, two, or more ekes, the whole in autumn being sent to market or the shops of the wholesale purchasers of honey. Owing to the very narrow dimensions of the crown portion of these hives, the honey there found is usually of a very pure character. Now, if the so-called "new depriving-hive" were made of much smaller dimensions, and used simply as a substitute for these ekes of the Irish cottars, it might not be altogether useless, but I do not think it can for a moment compare, as a "depriving-hive," with the adjuster-box described by me in a previous Number. I am glad to find that in the reply given to the "DEVONSHIRE VICAR," notice is again directed to this plan, which, as is truly said, "has never received the attention which it so well merits." My chief object in alluding to this at the present time is to say that in the engraving it is made to appear as if there were six apertures of communication, five of them being visible through the back window. It was a mistake of my own, and not of the artist. There should be only four apertures, none being made on either side of the centre bar. Once only have I been annoyed by the bees working comb upwards from the stock-box, and that was owing to my inadvertently leaving open a three-inch hole in the centre of the adapter between the proper side communications. When another of these hives is to be made for me, I intend to have the slits even more towards the sides—viz., on either side of the two end bars only, so as to interfere as little as possible with the operations of the bees in the centre of the stock-box, and to lessen the probabilities of the queen passing through to lay eggs in the upper combs.—S. BEVAN FOX, *Exeter*.

POLLEN COLLECTING AND WINTERING BEES.

THE unprecedented cold has, within the last month, given place to as unusual a mildness, causing fruit trees and gooseberry bushes to put forth their buds, reviving a hope that

our now naked hollies and laurels may by-and-by follow their example. The bees were not long in profiting by the change, as several of my hives were busily collecting pollen on Sunday, the 3rd instant—indeed, one hive I now suspect having been so employed for eight or ten days previously, judging from the business-like air with which they set out late in the afternoons; but not expecting such a proceeding before the accustomed beginning of March, they were not examined. Whatever be the upshot of the season of 1861, our favourites have got an extra month's start to begin with.

Were it not that I am desirous to test the length of their memories, or rather perhaps their lives, by withholding their accustomed supply of rye flour, to see if they came to seek it, as was their wont last spring, at the customary place, I would have again attempted supplying by the less effectual mode within the hive recommended by "H. T." By the way, some of your correspondents will soon be getting desirous to learn how your valued correspondent, "A DEVONSHIRE BEE KEEPER'S" *black bees* look now, wearing up to a green old age in his Italianised stocks. I regret to notice in your last Number that gentleman's doleful mortality report of the south. In our neighbourhood, considering the peculiarities of both last summer and winter, stocks have stood remarkably well. My ten came all through so far in very fair condition.

Perhaps the last-named correspondent would kindly say how he protects his hives? No dampness such as he complains of with us, causing moving into dry boxes at the end of the season unnecessary, thanks to the extra thick straw hackles. Such of your correspondents who rest content under no better protection than the shadow of such a protector as a milk-pan, would do well to bear in mind that damp is one of the worst evils they have to contend against, cold when the hive is quite dry having no prejudicial effect, the inmates being kept undisturbed. One hive I had as a test, having, although only peopled late in the season with an artificial swarm, resisted with impunity 25° of frost within the hive, and is now all right.—A RENTREWSHIRE BEE-KEEPER.

OUR LETTER BOX.

DUBBING GAME BANTAM COCKS (*A Poultry Fancier*).—Yes, their combs should be dubbed, and it is quite as essential it should be well and cleanly done as it is in the larger breeds.

COCK WITH BENT KNEE (*Brahma Cock*).—We know of no means of remedying the deformity of which you complain; nor should we think it worth the trouble, as it is an indication of weakness, and such would prevent us from using him as a stock bird.

POINTS IN GOLDEN-SPANGLED HAMBURGS (*H. H.*).—There are two opinions—one goes for black breasts, the other for spangled; but both go for white ear lobes. We, therefore, advise you to send the spangled breasts and white ears. You do not mention combs: they must be upright and firm.

BANTAMS IN A GARDEN (*F.*).—The Bantams we kept were the Sebright; and we know now a garden under the care of an old fidget, who hates poultry and loves gardens, and yet bears the little birds and rather approves of them. White worsted interlaced liberally among the branches will keep away Bullfinches and Tomtits from gooseberry and currant trees.

LODGING FOR AN EARLY BROOD (*F. E. M.*).—As you appear to lack space for all your fowls, we advise you to do that which we do ourselves—put the hen under her rip on a good *hard* gravel path by the side of a strawberry-bed, or a bank having a southern or western aspect, and providing the brood with dry dust. They will do *no harm of any kind*. The rip must be securely and warmly covered up at night, and your chickens will do all the better if you give them some good ale to drink. We last year had a hundred chickens on the paths of a small garden, and we wish we had the same now. The hen is *not to be let out*. If you disapprove this you must provide a quiet place on the ground, and where there is dust.

RIGHT TO REMOVE HEN-HOUSE (*Sussex Higglar*).—Having the leave of the Lord of the Manor to remove it makes no difference. The permission of the copyholder is essential, if any permission is needed.

PULLET'S WINGS CUT (*W. R. E.*).—Yes, they would stand a chance of winning; it is not an advantage, but it does not disqualify.

INDUCING A MOVED HEN TO SIT (*A Kent Amateur*).—The best way to make a broody hen sit, after being removed from her chosen spot, is to place her at night on the eggs where it is wished she should remain. She should then be covered up closely, so that she can neither see nor escape. She generally takes kindly to the eggs after this. If she does not, she should be shut in a box whence she cannot get out, and which will not allow her to stand up.

COCK'S COMB FROSTED (*Powter*).—Camphor dissolved in ammonia is the best thing to put to a cock's comb that is frosted. It is a certain cure.

PIGEONS IN SAME LOFT (*Idem*).—There is little or no danger of the Pigeons crossing, so long as there are only the three or four pairs; but there is afterwards when they are more numerous.

TURKEYS' AND GEESE EGGS UNDER A HEN (*Idem*).—Fowls will cover five or six Turkey's eggs, but they are not fit to sit on Goose eggs. A hen could not cover more than three.

REARING PHEASANTS (*J. O. G.*).—If you send thirteen penny postage stamps and your direction to Mr. Baily, 113, Mount Street, Grosvenor Square, W., he will send you his little book entitled "Pheasants and Pheasants."

WEEKLY CALENDAR.

| Day of M'nth | Day of Week. | MARCH 5—12, 1861. | WEATHER NEAR LONDON IN 1860. | | | | Sun Rises. | Sun Sets. | Moon Rises and Sets | Moon's Age. | Clock before Sun. | Day of Year. |
|--------------|--------------|-------------------------|------------------------------|-----------|-------|-----------------|------------|-----------|---------------------|-------------|-------------------|--------------|
| | | | Barometer. | Thermom | Wind. | Rain in Inches. | | | | | | |
| 5 | Tu | Hyacinth. | 30.341—30.121 | deg. deg. | | | m. h. | m. h. | m. h. | | m. s. | |
| 6 | W | Wallflower. | 30.490—30.128 | 52—23 | N.W. | — | 38 af 6 | 45 af 5 | 42 3 | 24 | 11 40 | 64 |
| 7 | Th | Ribes sanguineum. | 30.255—30.024 | 51—32 | N.W. | ·14 | 36 6 | 47 5 | 22 4 | 25 | 11 26 | 65 |
| 8 | F | Lonicera tartarica. | 30.255—30.024 | 38—30 | N.E. | ·02 | 34 6 | 48 5 | 51 4 | 26 | 11 12 | 66 |
| 9 | S | Double-blossomed Furze. | 30.239—30.156 | 39—27 | N. | ·02 | 32 6 | 50 5 | 13 5 | 27 | 10 57 | 67 |
| 10 | SUN | 4th OR MIDLINT SUNDAY. | 30.182—30.043 | 40—18 | N.W. | — | 30 6 | 52 5 | 30 5 | 28 | 10 42 | 68 |
| 11 | M | Almond. | 29.950—29.700 | 41—27 | W. | — | 27 6 | 54 5 | 46 5 | 29 | 10 26 | 69 |
| | | | 29.631—29.453 | 45—29 | S.W. | ·08 | 25 6 | 55 5 | sets | ● | 10 10 | 70 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 49.2° and 31.7° respectively. The greatest heat, 63°, occurred on the 10th, in 1841; and the lowest cold, 7°, on the 10th in 1847. During the period 163 days were fine, and on 75 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

WE have now arrived at the most favourable month of the year for seed-sowing, and upon the right use of it will depend in a great measure the success of keeping up a plentiful supply for summer, autumn, and winter use. If the weather be fine, and the ground in proper condition, which is indicated by its crumbling beneath the tread, the following sowings may be made:—*Beans*, if the weather will permit plant out those in pots or boxes; earth up after planting. Get in another crop of *Windsor* or *Longpod*. *Cauliflowers*, where there are more than three plants under each hand-glass they may be thinned out to that number, and planted on a rich piece of ground; or if the *Celery* trenches are opened and manured, they may be planted in them, as they will be ready to come off before the trenches are required for the *Celery*. *Cucumbers*, add fresh soil as the roots of the plants appear on the outside of the hill, lay it close to the side of the frame for a few days that it may get warm. *Brussels Sprouts*, sow a small bed on a warm border; as also *Green Kale*, *Savoy*, *Chou de Milan*, *Cauliflower*, and *Broccoli*. *Carrots* (*Horn*), sow. *Lettuce*, make frequent sowings of these, as also *Radishes*; it is a good rule to sow a succession of them when the last sowing is fairly above ground. Cover them with litter in frosty weather. *Pot Herbs*, sow seed, or increase by division of the roots. *Peas*, plant out those in pots or boxes on a south border, plant them thinly in the rows, even if it should be necessary to shake the whole of the soil from their roots. Sow for a successional crop. Stake the early sowings. Fir or yew branches put on the outside of the stakes will shelter the *Peas* from cutting winds, which are now to be more guarded against than frost. *Potatoes*, when planting the early crop it is of advantage to draw deep drills, partially fill them with leaf mould, then plant the *Potatoes*, and cover with the same.

FLOWER GARDEN.

Plant out *Pansies*, *Carnations*, &c. Sow *Wind Anemones* for autumn blooming. Attend to the covering of showy annuals, placing inverted pots over them where they are liable to be injured by frosts or grubs. Where turf is scarce, or considered too expensive, a good lawn may be made by sowing a selection of Grasses called a "Lawn mixture," choosing those that are of a short and close growth. This is a good season for preparing ground for the purpose. Dig it carefully over, pick out all roots of perennial weeds, rake the surface, and bring it to the level required; give it a good treading, and then roll with a heavy roller to bring the ground to a regular and uniform consistency. Having done this, give the ground a slight stir with the rake, sow the seed, and finally roll it.

FRUIT GARDEN.

See that all newly-planted fruit trees are securely staked and mulched, and that the blossoms of the early kinds are protected in due time. Take advantage of a dry day to draw away the soil from the stems of *Goose-*

berries, 2 inches in depth and about 2 feet or 3 feet in diameter, with a hoe; for about this time the *Gooseberry* caterpillar will begin to be on the alert. Sprinkle over the space cleared some soot and wood ashes, returning the soil with the back of the hoe or rake: this has not only a material effect upon the vitality of the grub, but also acts as a stimulating manure.

STOVE.

Cuttings of all the free-growing, softwooded plants—such as the different showy varieties of *Aphelandra*, *Begonia*, *Justicia*, &c., will now strike root freely in a brisk bottom heat; they will make, if properly managed, useful and handsome plants for autumn and winter blooming. Seeds of the most ornamental sorts of stove plants may now be sown.

GREENHOUSE AND CONSERVATORY.

Examine the balls of the plants in the greenhouse that have not been shifted, and see that they are in a proper state of moisture; for as the sun's power increases a corresponding increase of water is necessary for the roots. The potting of all specimens to be finished as soon as they begin to make growth, and to be then kept rather close for a week or two until they begin to indicate new growth, when air may be admitted freely in favourable weather. Repot or top dress *Heaths*; use abundance of drainage and sandy heath soil full of fibres. See that the ball is thoroughly moist before shifting; for if dry, no after watering will penetrate the ball. Give attention to the training of *Tropæolums*, *Pelargoniums*, and *Calceolarias*; to be shifted into larger pots as they require them. Excite in a gentle heat *Dahlias*, *Fuchsias*, *Cupheas*, *Bouvardias*, and other such plants, to afford cuttings. Pot *Cape* or other bulbs as soon as the foliage gets strong; use a compost of loam, leaf mould, and sand.

PITS AND FRAMES.

Maintain a kindly heat in the cutting-frame. Top the cuttings that have taken root, and are beginning to grow. Continue to put in cuttings as previously recommended.

W. KEANE.

DOINGS OF THE LAST WEEK.

THIS has chiefly been confined to the routine of last week Digging, trenching, making cuttings, potting stove and bedding plants, taking off *Dahlia* slips, bringing the general crop of tubers of *Dahlias* into a mild heat averaging 50°, sowing *Radishes*, *Cauliflowers*, &c., between the rows of *Potatoes* planted in the earth-pit, watering with warm water the *Radishes* coming in for use, slightly watering bed with early *Carrots* and *Radishes*, the last soon to be ready, moving *Strawberry* pots showing bloom to *Peach-house*, because, being at an angle of 45°, they set better there than in flatter and damper houses. *Strawberry* fruit swell slowly on account of the dull weather, and giving them much artificial heat under such circumstances makes the fruit little better than a piece of Turnip. Used weak manure water for advancing crops, and common water until the flower-truss shows. There has been no great need of thinning the fruit as yet. When *Keens*, &c., come to set freely, the thinning

must be resorted to, to secure fine fruit. If the day is sunny and the air rather dry, we find that a slight dewing over the plants from a fine syringe helps to swell and disperse the pollen-bags. In dull weather the air will generally be moist enough for them. No Grapes yet in bloom, but when in bloom medium dryness is desirable; but if the days are cold, and the nights frosty, the air is apt to get so dry that the capsule clings round the anther-boxes like a tight-fitting nightcap, and prevents so far the processes of fertilisation and setting. Under such circumstances extra moisture from evaporating-pans will be desirable; but in dull weather the moisture proceeding from the floor and stages of the house will generally be sufficient. We treat Peaches much as we would Strawberries when in bloom. When well set they both like a skiff from the syringe, especially when shut up for the afternoon. Tied down the shoots of third crop of Pelargoniums to make them bushy. Potted Fuchsias that had been set in a little heat to break, when shoots half an inch in length, shaking away a portion of the soil, and placing them in rich sandy loam in similar-sized clean pots, to be repotted afterwards in stiffer loam. Gave a size larger pot also to young Fuchsias struck in autumn, watered Potatoes in pots, gave plenty of water to Cinerarias in bloom and coming into bloom, gave water to Hippeastrums showing bloom, keeping those dry that are yet in a state of rest—at least, giving no more moisture than they can extract from the pots standing on a tile floor, pricked off plants of the first-sown Celery, gave more room to Cucumber plants, and threw two or three loads of stable dung in a heap, watering a little when necessary in order that it might be sweetened, and fitted to mix with tree leaves. This is the most economical mode. Leaves alone will not do at this season for keeping up a temperature in beds of from 60° to 65° and 70°. If leaves are mixed at once with horse-dung, they get too much decomposed before the dung is sweet. When the dung is nearly sweet the mixture soon makes all nice without waste. In the second turning of the dung a lot of leaves may be thrown over it, which will thus absorb the heat thrown off, and yet not hinder the sweetening process. Added the small heap of sweet dung and leaves set aside the other week to the bed under the frame, which otherwise would not have been hot enough at this season, turning the bed for two feet, and incorporating the fresh with it, raising it altogether a foot higher, and being so confident of getting heat enough as to place rich light soil on the bed, to be planted in as soon as it is warm enough.—R. F.

NATURAL BOTTOM HEAT, KIDDEAN SYSTEM, AND GEOTHERMAL CULTIVATION.

FORASMUCH as some of my friends have taken in hand to write good, bad, and indifferently on the origin, progress, and present state of the three above headings, it seemed good to me also to write upon them from a different point of view, having had perfect understanding of all the three from the very first. I shall not travel out of the country to prove that some holy fathers had reared Water Cresses and other herbs by means of bottom heat, from the hand of Nature, along the margins of the rills from hot springs in Scandinavia, at a period far remote from the first ideas of the circulation of hot water, nor that the King of Bavaria had Pine Apples on his table every week in the year 1820 by the Hamiltonian system. But I shall go the length to Paris for the last idea of geothermal cultivation, and I shall attempt to put the saddle on the right horse, the horse in the right stall, with a patient companion in the next one; but instead of a colt, Ossian, my Scotch terrier, will be just as patient, and he will watch.

About the year 1825, Mr. Hay, a landscape gardener and garden architect in Edinburgh, began to introduce the cultivation of Pine Apples plunged in beds of soil heated from below by steam and other contrivances, to get rid of the old tan-beds. Five years later, in 1830, Mr. Archibald Gorrie, a well-known gardener in the Carse of Gowrie and in all the gardening and farming periodicals of the time, discovered, by means of a rudely constructed hotbed or frame, that the natural heat of the soil, brought up to the surface in spring water, was capable of keeping greenhouse plants from frost during the winter; and he

suggested that a long deep drain might be made from a well to carry off the water—the warm water from the well as it would be comparatively in winter—and that boxes of tender plants might be placed on supports across the drain and over the water with a thick covering for the top like covering over glass. But the whole plan is transcribed below for your use and benefit, also the first use which was made of that idea in England, and how that use embraced the Kiddean system of heating a conservatory—that is to say, by means of warm air without any provision being made for withdrawing the cold air from the house, which drawing off of cold air is the basis of Polmaise. But for our readers' use and benefit, and for us and ours, the particulars of this are here transcribed.

“On Preserving Tender Plants in Winter by Means of the Temperature of Spring Water. By Mr. A. Gorrie, F.H.S., Annat Gardens, Feb. 4, 1830.—(*Gardener's Magazine*, vol. vi., page 402.)

“There is a curious coincidence between the annual mean temperature in the open air, and the annual mean temperature in a deep spring well at the same place. In a spring well of that description at Annat Gardens I find the temperature of the water to indicate from 46° to 47° in the winter months, unaffected in the least by atmospheric temperature, however low that may be. *** It occurred to me that by spring water temperature many plants might be easily preserved in winter. To ascertain how far this theory was correct, I placed a small frame over the well on a floor of boards 2 inches wide by 1 inch in thickness, and 1½ inch between the spars to admit of the heat rising in the frame from the water. Knowing that glass would not be purchased by that class of people whose advantage I had in view, I covered the sash with cotton at 4d. per yard, and in the frame I placed pots of Cauliflowers, Lettuces, Pelargoniums of different sorts, Chrysanthemums, Primula sinensis, &c. The air, as might be supposed, is nearly saturated with moisture: therefore, fresh air has to be admitted as frequently as possible. The vegetables and plants continue fresh, and the Pelargonium odoratissimum—i. e., Prince of Orange, has been all along in flower; and I am fully convinced that where such spring or well can be made available by means of a cut 2 feet deep, 2 feet wide, with two or three-inch offsets (slabs of wood or stone) at each side of the running water in the trench, to support the ends of a box 9 inches wide and 4 inches or 5 inches deep, placed within 2 inches of each other over the rill, into which boxes Lettuce and Cauliflower plants, Chicory, &c., might be planted, the whole to be covered with hoops and loose matting, a winter conservatory might be easily constructed over the run of water from one spring for the use of a whole village. As the rill brings a continual flow of water at the temperature of 46° to 47°, the earth in the boxes will always be kept considerably above the freezing-point in the coldest night. *** A glass cover over the trench would admit of a greater variety of tender plants for preservation.”

This very idea of using the running water of a spring at the depth of 2 feet from the surface of the earth, for the use of a village, was put into actual practice by one of the most practically scientific amateurs in England after Mr. Knight, of Downton Castle—I mean Mr. Williams, of Pitmaston, near Worcester. He heated a large orangery by means of a “rill” from a well at 70 yards distance, and you will find the account of it, and the highly approving opinions of it also, by one of our very best practical heads in England—Mr. Thomson, of Chiswick Gardens, in the third volume of the “Journal” of the Society, page 275. That was in 1848, or eighteen years after the suggestion was made by Mr. Gorrie in the “Gardener's Magazine;” but the said orangery was heated by the running from the spring some years previous to 1848, and the following is Mr. Thomson's report of it:—“In the conservatory the Orange trees exhibited a very healthy appearance; their foliage was a darker green than

is usual to be seen on large Orange trees in this country. They had flowered most profusely, and enough still remained to scent the air to a considerable distance outside on the lawn and around the house. The conservatory adjoins the house at the south-west end. It is 33 feet in length and 28 feet wide, with a dome in the centre: consequently a large surface of glass is exposed to radiation. But fire heat was only applied during three nights in the course of last winter, which was by no means remarkably mild; for on seventy-five nights the thermometer was below freezing, frequently below 24°, and even as low as 17° Fahr. The floor of the conservatory is grated, and underneath the grating there is a chamber with which a large drain communicates. This drain is 75 yards in length from the conservatory to the place where its further extremity is exposed to the open air. Pure spring water out of the sandstone flows constantly along the drain, imparting its temperature to the air passing over it into the chamber below the conservatory. The running water insures the purity of the air; and if the latter should enter cold and dry, it will become comparatively warm and moist before its introduction to the conservatory, as its temperature is progressively increased in its passage, so will likewise be its capacity for moisture; and this the evaporation of the water will abundantly supply."

Mr. Gorrie's anticipation of the usefulness of running water from a spring is fully borne out by Mr. Thomson's report; and as the thermometer was often below 24° that winter, and the fire was used on three nights only (the thermometer being at 17° on one of them), we may conclude that the hot air in the chamber under the conservatory, and over the "rill" in the drain, supplied sufficient heat to keep out 10° of frost, exactly on the Kiddean system. If we imagine now one of Mr. Kidd's air-chambers to be placed at 75 yards distance from that conservatory and at the mouth of the drain, we shall have no difficulty in understanding how an additional power of 22° of extra heat could be let loose into the drain, and on downwards to the chamber below the conservatory, and with the thermometer at zero, the Orange trees to be as safe as they were when it stood at 24°, and that by the very reverse of Polmaise. Mr. Gorrie started the idea practically in 1830; Mr. Williams put the idea into successful practice ten or twelve years subsequently; Mr. Kidd, in 1859, confirmed the idea by a more powerful agent, which is sufficient to heat any ordinary conservatory, even if the furnace is 75 yards from the house; and we all know that there is not the smallest difficulty in supplying moisture to heated air up to the point of saturation.

Why, then, bother about Polmaise? But Mr. Kidd's own ideas of his plan do not stop, or, I may say, stoop at such puny efforts. He says he could heat every house in Kingston from one furnace, and every room and passage in each house separately, or altogether, with as great ease as it is now lighted with gas, and much in the same way, and that with the air as purely heated as that from the well under the conservatory at Pitmaston.

Then, about the Parisian fashion. It will be necessary to state that there was a wild idea prevalent here forty years back—that plants from warmer countries might, by degrees, be rendered more hardy by sowing their seeds in cooler and still more cool climates until they could bear the coldest point, which was our own climate. As if the Mandrakes of the Sahara were sown at Algiers, and their seeds in Caffraria, the next generation in Calabria, the next at Naples, and so on to Nice and Marseilles, thence to Pau, then to Jersey, and from there to Cornwall, and in time on to as far north as Dingwall at last. But such hopes have not been realised.

The next idea was to secure greenhouse and half-hardy plants out of doors from frost by all kinds of coverings, and by placing jars of hot water, or pans with hot cinders. Then followed conservatory walls covered with glass,

canvass, thatched hurdles, or mats; and this brings us on to the period of the first Reform Bill in 1832.

From 1830 to 1840 these conservatory walls were very much trusted to for the acclimatising of plants; and the notion that plants became more hardy as they advanced in years was still prevalent. But as early as 1836, the Rev. Dr. Herbert, who was the best practical gardener of all who treated scientifically on any branch of the craft, pointed out very fully what was really wanted to bring the various schemes for acclimatising plants to a practical issue, or, in other words, to flower freely in the open air. That was to apply bottom heat in summer to warm the soil about the roots, to rest the plants in winter under tarpaulin and other coverings, easily moved up or down whenever the weather permitted, and to keep the frost from them in the usual way. The marrow of his plan is hereto appended; and if the reader has heard of this "geothermal cultivation," the latest fashion from Paris, you will see that M. Naudin, the author of it, has only adopted Dr. Herbert's plan, to which he has only added one condition, and that condition renders the whole scheme impracticable to the last degree. In England, however, Dr. Herbert's suggestions led to the adoption of one of the best branches of the gardening of the present day—that of applying bottom heat in summer to the roots of Vines, and a more careful exclusion of heavy rains and hard frosts in winter from the borders. But here is Dr. Herbert's plan in his own words, headed "Flued Borders," in his great work on the *Amaryllidaceæ*, page 402.

"The vigour with which mules of the genus *Crinum*, and many other plants, grow out of doors against the front wall of a stove, persuades me that a great variety of plants might with a little care be cultivated better in the open ground than under glass, if the border in which they are to grow were flued under ground, and a tarpaulin or any waterproof covering placed over them at the times when it might be requisite to exclude either rain or cold. The covering might hang on the two sides of a longitudinal pole, like the two slopes of a roof, and be made to roll up either with or without a spring. There are many plants which seem to enjoy a cool atmosphere, but will not flower or thrive vigorously without the stimulus of heated earth at the root. Having chosen a situation where a furnace and boiler could be placed under ground, I would carry the smoke-flue as far as its heat would extend on one side; and hot-water or steam-pipes in a different direction, as might be found convenient, enclosed in a stone or brick flue to as great a length as its influence might reach. In such a border I believe the genus *Hedychium* and many others would flower perfectly with the assistance of fire in the summer, requiring nothing but a covering to throw off the wet; and the heat might be turned into other pipes for the advantage of plants which might require the warmth in winter rather than in the summer. If in front of a wall a moveable verandah, which might be either ornamental or made of thatched hurdles or hurdle-gates, would throw off the wet, which is the principal cause of injury in winter; for many shrubs will endure the access or severe frost to the head, if all wet can be effectually excluded from the base of the stem and from the root by any sloped heading. Under such a verandah, with occasional heat to the flue during the early part of summer, and perhaps in severe frost, *Amaryllis*, *Brunsvigia*, *Buphane*, *Nerine*, *Hæmanthus*, and all the allied genera of African bulbs, as well as the South American, would certainly succeed better than with any other treatment. I believe that not only those, but even some of the tropical *Crinums*, would succeed better so than in a stove, and, probably, many shrubs which might not be expected to live there. The advantage of a verandah or pent-covering, however rude, on the north side of a wall, for the protection of half-hardy plants—such as *Camellia japonica*, Asiatic species of *Rhododendrons*, &c., is not

sufficiently known. It is the excitement occasioned by the access of the sun that makes such plants liable to injury; and a south aspect, whether in summer or winter, is prejudicial to them. I believe that the covering of a pent roof in a northern aspect without any flue is more congenial to those plants than a greenhouse, with caution to prevent any heavy rain or snow from being driven upon them by a strong north wind, which is easily done."

These ideas and suggestions were published by Dr. Herbert in 1836, as just stated, in a standard work on the Amaryllidaceæ, which found its way into all the natural-history libraries and museums in Europe and America. They were quoted since in all our gardening books and periodicals, and they now form the ground books of M. Naudin's pamphlet on "geothermal cultivation." He agrees with Dr. Herbert as to "the growth in our climate of plants from warmer countries in the open ground, and without protection [in summer], not merely a sufficient atmospheric temperature, but bottom heat as well." And he recommends the very same means for giving this bottom heat, and for covering the plants in winter, as were given in the "Amaryllidaceæ" by Dr. Herbert—that is, "by artificially heating the soil, so long as its natural temperature is insufficient, by means of flues or hot-water pipes." But "it still remains to put the stem and branches beyond the reach of frost in winter." This he proposes to do, in Dr. Herbert's words, in a pent or tent roof of some textile fabric; and the south side to run up and down, so as to give light and air to the plants in mild weather. "A framework of wood, simple, light, and strong—a sort of cage which would pull to pieces and be easily put together again—would serve to support the protecting materials; in short, it would be merely a tent to secure the plants from cold"—such as, for instance, Lady Granville used thirty years since at Dropmore, and others after her, while the foolish rage for "acclimatising" plants was prevalent in Britain. "Rush mats would suffice for the sides, and the more pliable materials should be reserved for the top. It would be necessary to cover the whole with a tarpaulin reaching to the ground, which, by thickening the covering, would render it more effectual, and at the same time protect it from the effects of moisture," which Dr. Herbert dreaded so much in such experiments.

The scientific reasonings and practical observations of M. Naudin on the subject of his pamphlet are all very good, except the one on which the whole scheme turns—the practical part, and that reveals M. Naudin as a complete theorist; and any one here or in Paris, who will follow his directions to the letter in the winter management of a pent-up structure, will be as sure to fail with it as Louis Philippe failed to keep on the throne of France. He says, "The soil in which the trees are planted should be isolated from the adjoining ground, and heated by flues or hot-water pipes." This "isolated" is the one point in which M. Naudin differs from Dr. Herbert, and means (if it is meant to have a meaning), that the bed is to be separated from the bottom or subsoil, as we separate Vine-borders on arches or on flags of stone, in order to get bottom heat for the roots. Then "the tents should be made as close as possible during severe frost; and if the temperature of the interior descend to near the freezing-point, *the soil should be moderately heated, so as to maintain the air of the tent above 32°*" !!! Now, "believing," as does one of my friends and fellow-labourers in explaining practical cultivation, "that M. Naudin's suggestions may be successfully acted upon as regards many plants with which our greenhouses are at present overcrowded, and this with the severity of the weather in last December still fresh in our memory," I would ask to what degree of heat should the *dry soil* of the beds for geothermal gardening—say beds 20 inches deep—how hot must the dry soil be kept to prevent the

"frigorific pulsation" of meteorologists descending on the head of plants 4 feet above the surface of the "heated soil?" Or, say, the isolated bed of soil is only 1 foot deep—is there a man on this side of the Channel, or on that, who will say that the lower stratum of the soil, in which the best of the roots are, must not necessarily be as hot as would roast Potatoes, before the upper surface of the bed is sufficiently warm to repel the frost from the stems and branches, which are within 4 feet of the ground, to say nothing about the fate of such as are higher from it? The idea could never enter a practical mind—the thing is wholly preposterous, and will never do. As in the smallest greenhouses, and in the little cold and hot frames of the present practice, you must not trust to or try your means for bottom heat in "geothermal cultivation" for the supply of top heat in the same house, frame, or tent. There must be branch-pipes or branch-flues to keep the air to the proper standard, without ever having recourse to those which supply the bottom heat. Geothermal culture has been well tried, and is undoubtedly understood by British gardeners. Our conservatory walls, and the rage for acclimatising plants formerly, have left nothing to be decided on respecting it among our gardeners.

We hail with satisfaction such attempts at reviving sound practical ideas which are of long standing amongst us, like this by M. Naudin; and any one who will give us the means, the hard siller, to set the thing in motion will have nothing to risk in finding out the surest way to success. The subject is already ripe with us, and at our fingers' ends. We shall not risk or destroy a root, or spend a shilling more in fire than is actually necessary. In the most extreme case—say when we have stove bulbs, as Crinums and such plants, under geothermal culture, we shall not use the flues or pipes which are laid for the bottom heat oftener than once in three weeks or a month from October to April.

To keep the air of the pent-house above the freezing-point, we must use the same styles of heating which we do now for greenhouses, and not attempt with M. Naudin to heat the soil from below; for that would burn up and destroy every root in the bed of soil, ere the soil could be heated to the necessary degree—if, indeed, a bed of dry soil could be heated at all. From the middle of April to the end of August, the underground pipes or flues would be worked as Dr. Herbert recommended, just to keep the heat of the soil to the required degree and no more, as is done at present where Vine-borders are isolated from the subsoil and heated from below. But, for the sake of argument, suppose the roots at the bottom of the bed of soil could bear a heat of 200° with impunity, the heat of a hot-water pipe at work in a greenhouse is often at that point of heat in hard weather, and when the quantity of piping is barely sufficient to work the house; and suppose that the winter is the time for resting the plants that are under geothermal culture—is that not the right time to have the soil in that state which we term neither wet nor dry, and at the lowest point of bottom heat? and is it when the soil is in the driest state, and at the coolest degree that any mortal being should think of applying bottom heat to a bed of soil to keep out the frost? It is even so; for M. Naudin puts the plan plainly before our faces in black and white, and we are so taken with the fashions of Paris on this side of the Channel, that some of us here "believe such suggestions may be successfully acted upon." And if that is not grafting at the wrong end of the stock, it must be bottom heat with a vengeance. Nevertheless, geothermal cultivation apart from M. Naudin's way of bottom-heating it, and on the principle of heating Vine-borders, deserves all the spirit there can be enlisted in its favour by urgent writing and by all the arts of persuasion. It is one of those schemes which are sure to pay in fruit as much as in flowers; and if I am spared till they can find me room in these pages, I shall give you the results of

all that has occurred to my mind since 1836, when Dr. Herbert probed the subject as to the cheapest mode of carrying it out successfully.

D. BEATON.

POTATO DISEASE.

IN 1856 I was led to try the effect of fresh-slaked lime and flowers of sulphur as a preventive of the Potato disease, and every successive season since I have applied the lime and sulphur with very marked success. With some varieties, to my mind, it has acted most decidedly as a check, if not a preventive, to the disease. The Early Oxford, Early Shaw, the Pink Eye, and Glory of the West, I have found to be more free than the Kidney varieties, with the exception in favour of the Red Kidney and the Cornish Kidney.

In applying the lime and sulphur I select as many seed Potatoes as I want to plant that season about the last week in February or the first week in March; I cut them in two or otherwise, put them in a tub or something similar to it, and strew the lime and sulphur well over them.

Two pounds of sulphur to a bushel of lime will be enough for six or eight bushels of cut Potatoes. I let them remain in the tub a week or ten days before planting.

I never, unless it is required, manure the ground at the time of planting the Potatoes. In a garden I choose from experience to plant Potatoes after a crop of Sprouting Broccoli or Cabbage. I trench from 30 inches to 3 feet, if a good deep soil, and well manure for those crops from old Melon or Cucumber-beds. I have found after fourteen years of close and careful observation that deep trenching, where it can be done, and good, clean cultivation, give the best chance of the Potatoes escaping the disease.—W. DOWN, *Gardener, Woolston House, Somerset.*

LATHOM HOUSE IN LANCASHIRE:

ITS HISTORY AND GARDENING.

(Continued from page 290.)

THE kitchen garden at Lathom contains, I should say, within the walls about four acres of ground, which being nearly level and walled all round with some intervening walls and spacious outside slips, is altogether a fine garden. The soil, a black sandy one, sufficiently open to allow the frequent rains the district is visited with percolating through it, and yet not of that hungry character which some sandy soils are—in fact, the soil contains no more sand than is necessary for its well-doing, and seems exactly suited to the growth of the Peach and many other trees. But it is more especially to the Peach that I would call attention; for while we are told in the counties near London cultivators have been for many years insisting that the Peach can only be grown successfully under glass, and glass-houses or cases, as they are called, are starting up in all directions—at Lathom House, Mr. Thorougood, the intelligent gardener there, tells me he has had good crops for some years, and the trees seemed healthy, in full bearing, and all that could be wished for, on an open wall. This may appear strange to some; but the readers of THE COTTAGE GARDENER will remember that I called attention to the same thing about two years ago from what I saw of the Peach trees at Knowsley, which is on soil of a similar description to that of Lathom, and distant some ten miles from it. Additional evidence since then confirms me in the opinion then given, that it is the soil that is often at fault where the Peach trees do not thrive. A certain portion of saline matter, either in the soil or atmosphere, or both, seems necessary to the well-being of this somewhat capricious tree; and the position of Lathom being somewhere about twelve miles from the western coast, from whence extraordinary gales occasionally send their spray thus far inland, we may fairly conclude the atmosphere to be often charged with it, and the soil is likely to contain it also. I think some of the readers of THE COTTAGE GARDENER mentioned having applied salt to their trees with benefit—a fact well worth recording, and one which I shall probably call attention to hereafter; but I now mention it, not with any view of detracting from the merit due to Mr. Thorougood for his able management of the fine Peach wall under his care, but as a sort of hint to others having unhealthy ones on a chalky soil to try some alteration. Certainly I never would wish to see healthier and finer trees than at Lathom, and the crops were good, only much later last season

than usual, owing, of course, to the sunless season we passed through, but the most of the fruit were fair-sized. In fine seasons they are, of course, larger; but a slight glance was sufficient to convince any one that at Lathom the Peach is at home, or, if not so, Mr. Thorougood has some magical way of persuading it to comport itself differently to what it does in many places more favoured in other respects, in climate, &c.

It is hardly necessary to mention the other fruits and vegetables in detail. Suffice it to say that Carrots, Beet, and Potatoes seemed to do well; the last-named, however, much diseased, as everywhere, while the nice appearance the soil presented when dug over with a spade, makes one long for so pliable a soil in districts where the most of the hand-tillage is obliged to be done with a three-pronged fork. Good Celery, Asparagus, and other things denoted the soil suited them; but I think the Cabbage tribe like a stiffer one. Not the least benefit to be derived from such a soil is the quantity of it a man can dig over in a day, and the pleasure there is in working a soil so agreeable and at the same time productive. The kitchen garden was all under crop and in good order, and reflected great credit on Mr. Thorougood.

It is not to be supposed that such a large kitchen garden was without its proportionate share of forcing-houses. These, however are not so numerous as are to be met with in some places; but here, too, I must say, that the most important occupant of such houses was equally well done by as the Peach trees—I mean the Grapes. An excellent house, and a large one too, was all White Muscats, and was a fine spectacle, they being ripe when I saw them in August last—bunches well formed, berries yellow and free from shanking. Other houses contained Black Hamburgs in good order, and the Black Barbarossa was as well set and as perfect as the Black Hamburg. Mr. Thorougood has some way of managing this somewhat capricious Grape so as to insure as perfect bunches as that of any other kind, while the large well swelled-out berries betoken that all is right where the roots are. I hope he will give the readers of THE COTTAGE GARDENER the benefit of his experience in this matter, for it is possible a like treatment might induce some of our other shy-setting Grapes to do better with us. The old Red Muscat of Alexandria, a Grape I have not seen for twenty years or more, was a notorious bed-setting one; but the few berries that did set and ripen were delicious. Other Grapes were grown well at Lathom; a good-keeping black one, something like the Trentham Black, was also grown. This Grape, of which Mr. Thorougood had not been able to obtain the name, had very sharp-pointed buds on the ripened wood, the bunch being somewhat long and less shouldered than the Hamburg. There were also some other Grapes but I had not time to notice all. I observed some good Citrons and Oranges growing against the back wall of one of the vineries and producing good fruit. A Peach-house had also yielded an excellent crop of early fruit, and was ripening its wood prior to working again in winter. Another house of the same kind was in bearing; and in some back pits Melons and other things were ripening in abundance. An excellent house of the latter was in a span-roofed building with the Vines trained on wire under the glass on both sides, and a wall up the centre. Other things also betokened that abundance of forced fruits which we seldom see in places whose claims to distinction are the thousands of bedding plants they require every year. At Lathom the more substantial requirements of the table are more in demand, and that these are amply furnished and in the best condition those that have seen this interesting place will bear testimony; and the keeping of the whole, considering its extent and the limited assistance Mr. Thorougood has to do it with, reflects great credit on him; and I have no doubt by-and-by he will be counting his Tom Thumbs, Verbenas, and other bedding plants in the same wholesale manner that he now grows his Peaches and Grapes, and be alike successful in both.—J. ROBSON.

GLEANINGS FROM SAWBRIDGEWORTH.

MR. RIVERS' celebrated nursery is about a mile and a half from Harlow Station on the Eastern Counties Railway. I found flies in attendance at the station, but preferred, on such a beautiful road, the good old mode of conveyance by "Shanks' nagie." On the 7th of February our first visit was paid to this great manufactory of fruit trees and Roses, extending over some 140 acres of ground, and containing a huge village of some forty glass houses, chiefly on the economical orchard style; these houses

ranging from 12 feet to 24 feet in width, and from 30 feet to 100 feet in length. My chief objects were to see these cold houses, to receive ocular proof of the economy and utility of the brick Arnott's stoves, and to notice how the frost had acted in-doors and out. It would be vain to attempt the description of such a place in a single article, and after the lapse of a fortnight I may make some mistakes in the matters to which I may shortly refer.

EFFECTS OF THE FROST.—These I found worse than I had anticipated. A deep, new cutting had been made for the highway within 20 to 30 yards of Mr. Rivers' mansion. A wall next the road keeps the bank up, and a little beyond the house this circumstance affords an easy mode of loading the huge packages of trees by rolling them into the cart instead of lifting them. This bank, on Mr. Rivers' side, and also on the opposite side of the road, had huge masses of all the best and hardiest climbing Roses, allowed to grow as wild and free as they liked; and I can well conceive the beauty of the masses of bloom thus presented to the view of every wayfarer. The great proportion even of these hardy Roses were much injured, and many killed to the bottom. All the tenderer Roses grown as standards, and even young plants budded low that were not protected by snow, if not killed, will be unsaleable this season. Though there were great quantities safe in the orchard and other houses, the proprietor, as soon as he saw how the frost would serve him, had resorted to every means to obtain a supply from warmer latitudes, where the sun had so hardened the wood that even the frost would not injure.

In the many furlings of low walls of wood, of brick solid and hollow—the latter answering no better than the former as respects warmth—Apricot trees had suffered considerably, and Peaches and Nectarines very much. A good many had been sold early in autumn, before the frost, and orders had since been given not to send out a single tree, however urgently required, unless it was perfectly sound. A great many will break when cut close back; but, of course, the sale for the season will be lost. In the open air young Deodars and Araucarias were much browned; and in the glass-covered houses, with Beech and Arbor Vitæ hedges for walls, fine stools and young layers of Magnolia grandiflora were much injured, and Tea and other tender Roses dead to the ground, but likely to spring again.

The people who feel a sort of delight in knowing that they are not alone in misfortune may be glad to know that such a veteran as Mr. Rivers could not foresee and prepare for all contingencies. Had it been known what the last week in December would do, thousands of these fine trees might have been laid in by the heels in an orchard-house, and thus not have had the points of the shoots injured. Even if taken up at the end of October the arresting of growth, with little or no protection, would have kept them safe. I noticed a large quarter of Apricots thus laid in by the heels close together, and, though the snow might have helped them, they were all as fresh and sound as could be. I learned from another source that a quarter of standard Roses had partly been taken up, and laid in by the heels at the end of November, and the rest allowed to stand. Of the latter, hardly one has escaped; of the former, hardly one was injured. I noticed that whole beds of young Pinuses, Junipers, &c., in pots, and budded Peaches, Roses, &c., were just laid down with their pots on their broad sides, and covered with straw and mats, and were all as sound as could be—the laying down of the pots keeping the soil from being deluged, and the coverings above them preventing the pots and the earth beneath them getting cooled. The great proportion of these would have been irreparably injured if left out exposed; and in such a large concern it is almost impossible that everything the least tender can be got under cover on a sudden emergency.

With much that is suggestive in the outside nursery, perhaps more especially in the quarters of our hardy fruits, the trees trained in different modes, but all having their fruit-spurs near home from frequent pinching and frequent lifting, so that the roots were like huge wigs, I will pass by all, merely noticing, first, that whole quarters, properly lettered to kinds, were laid in by the heels—as, unless this were done in time, it would be impossible to execute orders quickly enough; and secondly, that Mr. Rivers has found he can master the canker in such fine fruits as the Ribston Pippin Apple by lifting the trees and replanting them every second year at the end of October.

ORCHARD-HOUSES have been defined to be glass houses for fruit trees without any artificial heat. The larger and more

numerous houses are still of this description. Even those to which heat is applied by brick stoves and hot water are mostly built after the same style, consisting entirely of wood and glass. The lean-to seemed to have been the first idea. A row of posts—larch, deal, or oak—is fixed at the requisite height for the back, and these have boards nailed on them for the back wall, with openings left for giving air at top and bottom. A similar plan is adopted for the low wall in front, but one of the boards in front is made to open all the way. I noticed one of the oldest of the houses of this description devoted to Vines, with a sunk path in the centre; where the larch posts were giving way at the bottom they had been cut to where they were quite sound, and a low brick wall placed beneath them. The height of the back wall made these comparatively extensive. In cold districts, or where walls already exist, Mr. Rivers approves of covering the ground in front of them with a sloping shed-roof in the usual way. Such houses he prefers to be about 12 feet wide, and the rafter sash-bars 14 feet long, and 4½ inches deep by 1½ inch wide. Under general circumstances he greatly prefers span-roofed houses for economy and utility. The economy is greatly enhanced, not only by the fixed roof and the large squares of glass used, but also from having demonstrated that in such houses any ventilation in the roof is totally unnecessary, of which more anon.

The most perfect size for these smaller span-roofed houses, and especially suitable for amateurs, Mr. Rivers considers to be—width, 14 feet; height to centre ridgeboard, 9 feet; height of boarded side-walls, 5 feet. The door is in the centre of each end, and the triangular space above the doorway is made to open on hinges. The side walls are made of oak posts, and a plate on the top of them 5 inches by 3 inches. To that plate and the ridgeboard the sash-bar rafters are fixed opposite each other, so as to receive glass 20 inches wide and 12 inches deep, and 16 ozs. to the foot. On the sides a foot or 15 inches of glass are generally placed under the eaveboards. From thence to the bottom, boards three-quarters of an inch thick are nailed on the posts, with the exception of one board a foot wide all the way on each side, about the middle, which is hinged so as to fall down over the one below it for ventilation. Such a house may be finished, and painted, altogether for £1 the lineal foot.

The widths of these houses, however, are very various, many being 20 feet. One of the most splendid is one 100 feet long, 24 feet wide, 12 feet high to the centre, sides 5 feet 3 inches, 18 inches of that being glass, and the hinged shutter for ventilation 18 inches deep. The openings over the doorway in the ends were 3 feet deep, open all the summer. Six feet from each side were a row of seven slight iron pillars, at equal distances from each other, fixed to a bar of iron let into the rafter sash-bars; and, as far as I recollect, a stout iron rod went across from pillar to pillar. Thus, even allowing a yard of pathway all round, there would be a bed 6 feet wide at the two sides, and a bed in the centre of 9 feet wide for tall plants. The centre of the house was chiefly filled with Vines—and fine plants too, though the best had gone, and the sides with many et-ceteras; and I certainly was surprised that this splendid house was finished by an eminent tradesman for something near 30s. per lineal foot, or £150.

The utility of such houses, not only for saving our tender fruit blossoms in spring, but also for securing our tender fruit trees from severe frost in winter, was sufficiently apparent. The greatest cold experienced at the nursery was on Christmas morning, when the glass indicated out of doors 2° below zero. The greatest cold registered in any of these unheated houses was 10° above zero. Even 22° below freezing are no joke. It will freeze soil if at all damp 3 inches or 4 inches deep, even under glass, if it continue a few days. I am not aware that any Peaches, Apricots, Vines, Roses, &c., placed in these houses suffered in the least. Their security was owing somewhat to the ripeness of their wood, the comparative dryness of the soil in the pots, the stillness and dryness of the enclosed atmosphere; but also not a little to the fact that the pots were either plunged in, or at least were well covered over with, tree leaves or litter.

Other things being equal, plants in pots, without any such care as that last alluded to, are more liable to injury than plants growing in the ground. They should always, however, be protected in winter. On this account, and also for saving labour in summer, many would prefer planting out their bush or pyramidal Peach trees in their orchard-houses. Mr. Rivers has houses so planted out, Cherries lifted every two years, and Peaches, Apricots, &c., lifted at the end of October every year,

especially Peaches; but it was easy to perceive that for tender fruits Mr. Rivers considered the advantages of the pot in summer counterbalanced its disadvantages in winter. The flavour of the fruit and the ripening of the wood depend much on the heat of the soil; and in fine days, from the absorbing and conducting powers of pots, the soil inside will be warmed more quickly and more thoroughly than the earth in a house even under glass. True, it will cool also more quickly; but the alternations of low and high temperature in summer are of less importance in such cases.

No wonder, then, that the numbers of fruit trees in pots, and especially of the tenderer kinds—as Peaches, Nectarines, Vines, Figs, and even miniature bushes of Peaches and Nectarines grafted on the Black Damask Plum stock—are really immense; plants of these miniatures, not more than 6 inches or 8 inches high, being a round ball of fruit-buds. To the method of preparing these bushes, standards and pyramids, by a series of summer pinching I would refer to the "Orchard-house," the ninth edition of which I believe has lately come out. Among such a mass of plants, I could not but notice a large importation of maiden Peaches and Nectarines from America, most of them grown in the usual way; but a part had been nipped in by Mr. Rivers' directions, and stored, as they were, with short shoots some 3 inches or 4 inches long from the stem, the whole seemed a mass of fruit-buds from bottom to top, owing, no doubt, to the clear sky they there enjoyed. As an answer to the trouble of this everlasting potting, I was shown some Peach trees and massive shrubs of Apricots, studded with short wood bristling with prominent buds, that had stood ten years, and fruited every year, in thirteen-inch pots, and early in the autumn had been transferred to eighteen-inch pots. Some fine stubby bushes of Figs had also had their box-room increased, one of the best being a fine plant of the White Marseilles—a beautiful Fig, but with me a rather shy bearer. Mr. Rivers told me his was very prolific, and that there were two varieties, the only difference being their bearing properties. I noticed, also, that though the soil was rich, and even wet, the men were thumping it as hard as possible in the pots; not only in agreement with the orchard-book, but with principles advocated many years ago, to the effect that when *growth* is wanted, keep the soil open; when *fruit* is the object, keep the soil firm. R. FISH.

(To be continued.)

CULTURE OF GAZANIA SPLENDENS.

MAGNOLIA FUSCATA FOR GREENHOUSE WALL.

As the controversy upon *Gazania splendens* is seemingly at rest under the hardfought godfatherhood of Mr. Beaton, perhaps a few remarks practically upon the treatment of this hope-to-be useful plant will prove acceptable.

The plants should be taken up as early in the season as circumstances will permit—skillfully taking them up with a ball, potting them, and placing them in a situation where they can hang loosely, but singly, down, not even letting them see a knife; for wherever they are cut, followed by cold greenhouse treatment, they so surely and entirely damp off. The object of keeping the plants being not for cuttings, but for bedding or planting out to bloom at once—requires that they should neither be forced nor drawn, but simply kept through the winter as strong and healthy as possible. We have here some three or four dozen of last year's old plants looking as well as they did when first taken up.

Having baskets of the same make and maker as those at Sydenham, four of which hang in the conservatory, I filled them with variegated plants, *Alma Geranium* and *Perilla*, &c., with the centre of each filled with plants in full flower of *Chloris perfoliata*. Among the hangabouts this same *Gazania splendens*, looking admirably well with the growth full of flower-buds. Had we a few bright sunny days now and then through the winter, I believe they would continue in bloom through the same. I may add that a dark green foliage upon the wall at the back forms the best of backgrounds for these said baskets.

The remark brings to mind one of the climbers, which for covering a back wall is not surpassed; and yet I never see it recommended, or even mentioned, as in any way applicable for this subject. Fancy a trellised wall 13 feet high, a portion of it some 20 feet wide, covered *en masse* with an excellent green, the stem scarcely seen, alike in winter and summer. Three months in the year not only the conservatory, but for a distance around

when the lights are open, the breeze wafts a delightful fragrance. And now the question is, What plant is this? No other than the old *Magnolia fuscata*, which, as I have described, does here planted out as a fine young plant (not an old stunted plant such as you often see at nurseries), remarkably well, having been kept cut back for these last six years or more from all sides but one. The stem, as I have already stated, is scarcely discernible amidst a luxuriance of dark green foliage. Young plants fit to plant out in this way are seldom met with. In looking over Mr. William Paul's new nurseries, near Cheshunt, last week, I saw some very nice young plants of it. I believe it would stand 3° or 4° of frost.

I have had *Daphne indica rubra* stand 6° or 8° of frost in the late severe weather without any apparent injury. In the nursery I have mentioned above, with scarcely an exception, the things which have been transplanted (consequent upon the removal to the new nurseries few plants are otherwise), are uninjured. Certainly our late severe weather plainly illustrates to our climatising friends, that according to the state the plant is in, as regards moisture or internal sap, so are the effects more or less of the frost upon the same.—W. EBLEY, *Gardener, Digswell House, Welwyn.*

AURICULAS.

ALTHOUGH I am now not a "regular downright Auricula grower," like "D.," page 318, or a grower of any other plant to the extent implied, I am downright sorry he should throw the "aulpeens" to the refuse-heap instead of sending them to me, who am fond of them beyond measure. I am also downright uprightly concerned about his reference to Goths. In all my born days I never said aught of a florist beyond being a little cracked in the brain, and not in the brain either, but in the hot plate which covers it. But are we not all in the same boat? Do we not all live, move, and breathe on the Polmaise system, and no two of us just exactly alike? Now, with all my cold and hot-air movements, and with that plate as sound as brass can make it, I am a Goth if I know aught of crossing Auriculas; and I want the assistance of some Lightbody or other to save me time, which I can ill afford to waste at my time of life. I was going earnestly into the crossing of Auriculas this spring. I have a splendid lot of them in the back and front gardens.

If I understand "D.," in hybridising Auriculas, a bushel of "aulpeens" comes in the seedlings for every one that is a true cross between two good parents. If that be so, they are just like Polyanthuses, and crossing them by pollen proves the fact of the crack in the plate after all; and that reminds me that I offered three plants of my Good Gracious Yellow Polyanthus to one of our readers for one of a kind of yellow Polyanthus which he said came true from seeds, and I hope if he is still amongst us he will take this as a friendly hint, and if there is any known kind of Auricula which comes true from seeds, when deprived of all access of foreign pollen, I should be particularly obliged for a plant of it that would bloom this year, and I would give three times the value for it also.

With respect to Auricula Shows, the only way to get them up in England is to get the ladies to interest themselves in the matter, and if they will consent to patronise a Show, and go to it, depend upon it gentlemen will go to see them and their dresses, if they did not care a straw for the flowers.—D. BEATON.

THE TREDESCANTS.

JOHN TREDESCANT THE YOUNGER.

(Continued from page 305.)

It will be seen in Tredecan's will that he wished his Museum or "Closet of Rarities" to remain in his wife's possession during her life, and after her decease to be given to either of the Universities which "she shall think fit." This wish and intention, however, were frustrated, and we regret to have to record that the transaction imposes a deep blot upon the memory of Elias Ashmole. This antiquary became acquainted with the Tredecants in 1650, and of his subsequent conduct towards the family, Mr. Singer has published the following notes:—

"Ashmole, in his Diary, says—

"Decem. 12, 1659. Mr. Tredecan and his wife told me they had been long considering upon whom to bestow their

closet of curiosities when they died, and at last resolved to give it unto me.'

"Two days afterwards (on the 14th) they had given their scrivener instructions to prepare a deed of gift to that effect, which was executed by Tradescant, his wife being a subscribing witness on the 16th, as Ashmole records with astrological minuteness, '5 hor. 30 minutes post meridian.' On May 30th, 1662, little more than a month after John Tradescant's death, he records—

"This Easter term I preferred a bill in Chancery against Mrs. Tradescant, for the rarities her husband had settled on me.'

"Dr. Hamel succeeded in finding the protocols in this suit among the records of the Court of Chancery, in which Ashmole sets forth that in December, 1659, he visited the Tradescants in South Lambeth, and that he was entertained by Tradescant and his wife with great professions of kindness. That Mrs. Tradescant told him that her husband had come to the determination to bequeath to him 'the rarities and antiquities, bookes, coynes, medalls, stones, pictures, and mechanicks contained in his Closett of Raryties, knowing the great esteeme and value he put upon it.' That Tradescant himself had afterwards said to him, that in acknowledgment of his (Ashmole's) previous trouble concerning the preparation of the catalogue of his museum and gardens,* he purposed to do so, and that in effect Ashmole and Mrs. Tradescant, as long as she lived, should enjoy it together. Ashmole also says, Tradescant had made it a condition that he should, after Mrs. Tradescant's decease, pay a certain Mary Edmonds, or her children, £100 sterling. That he did then actually let a deed be prepared, by which he made over to him his collection of every kind of curiosities of nature and art within or near the house (Ashmole here cunningly includes the botanic garden), Mrs. Tradescant was to have the joint proprietorship, and nothing was to be abstracted from the collection.

"This deed Tradescant had, on the 16th of December (1659), confirmed under his hand and seal. Mrs. Tradescant fetched a Queen Elizabeth's milled shilling, which Tradescant handed over to him, together with the conveyance, and thereby he came into possession of the collection.†

"Mrs. Tradescant had signed the deed as witness; but, when Ashmole was about to leave the house, she had requested him to leave it with her, as she wished to ask some of her friends whether, by having signed it as witness, her right as joint proprietress of the collection might not be diminished. He left the document with her, in expectation that it would soon be restored to him, but this was never done. Now, after the death of Tradescant, she maintains that her husband never made such a conveyance; but the truth is she has burnt or destroyed it in some other manner.

"Against this Mrs. Tradescant refers to her husband's last will and testament of the 4th of May, 1661, by which all previous dispositions of his property, of whatever kind, were declared invalid, and strongly urges that the Museum was expressly bequeathed to her and her alone, with the stipulation that she should leave it either to the University of Oxford or to that of Cambridge; and she adds, that she had determined to leave it to the University of Oxford.

"Whether it was Ashmole's influence, or that the equity of the case was on his side, is uncertain; but the Court of Chancery decided in his favour, and he was declared the proprietor of the Tradescantian Museum. He obtained, without being able to produce any written document which declared his right to the possession, all that the two Tradescants, father and son, had with inexpressible trouble, and by means of many voyages, brought together in their Museum and Botanic Garden.

"The judgment of the Lord Chancellor (Clarendon) was:

"He, Ashmole, shall have and enjoy all and singular the bookes, coynes, medalls, stones, pictures, mechanicks, and antiquities, and all and every other the raryties and curiosities, of what sort or kind soever, whether naturall or artificiall, which were in John Tradescant's Closett, or in or about his house at

* In the preface to the catalogue the assistance of two friends is mentioned; it appears that the other was Dr. Thomas Warton.

† Ashmole says, "It was not thought fit to clogge the deed with the payment of the said hundred pounds to Mrs. Edmonds or her children, to the end that the same might better appear to be a free and generous gift, and therefore, the consideration of the deed was expressed to be for the entire affection and singular esteeme the said John Tradescant had to him (Ashmole), who he did not doubt would preserve and augment the said rarities for posterity." He declares that he will pay the money; and in his "Diary" we find that after Mrs. Tradescant's death, in 1678, he pays to a Mrs. Lea, probably one of the daughters of Mrs. Edmonds, £100.

South Lambeth the 16th December, 1659, and which were commonly deemed, taken, and reputed as belonging or appertaining to the said Closett, or Collection of Rarities, an abstract whereof was heretofore printed under the tytle of Museum Tradescantianum.'

"Mrs. Tradescant was adjudged to have merely during her life a kind of custody of, or guardianship over, the collection, 'subject to the Trust for the Defendant during her life.'

"The Lord Chancellor further decreed that a commission should be named to inquire whether everything was forthcoming which was named in the *Catalogue*; in order that if anything was missing she should be constrained to replace it, and give security that nothing should be lost in future. The commissioners appointed to carry into effect the Chancellor's decree were, however, two persons with whom Ashmole must have been on terms of intimate friendship—namely, Sir Edward Bysh and Sir William Dugdale, both Heralds like himself; and with the latter he at length became most intimately connected by marrying his daughter. To them was also added, in his official capacity, Sir William Glascock, a Master in Chancery. Tradescant's widow, as may be imagined, did not very quietly submit to this, as it seemed to her, unjust decree; but all her endeavours at opposition were fruitless—she was constrained to yield, and it seems probable that the depressing influence of this struggle affected her so much as to cause her death. She was found drowned in the pond in the garden cultivated by her husband and his father at South Lambeth, on the 3rd of April, 1678.

"Whatever may have been the legal or equitable right of Ashmole upon which the decree in Chancery was founded, it is impossible for a generous mind to come to any other conclusion than that the course he pursued was unworthy of him as a man of education, and of his wealth and station; for it must be obvious from the will of Tradescant, that even supposing he had willingly and wittingly made a deed of gift of his treasures to Ashmole, and given him formal possession by handing over the Queen Elizabeth's shilling, it is next to impossible to believe that Ashmole did not know that he repented that act, and wished to connect his own name with the bequest to the University."—(*Notes and Queries*, v., 368, 385.)

"The loss of her husband's treasures, says Mr. Rimbault, probably preyed upon the mind of Mrs. Tradescant; for in the *Diary* before quoted, under April 4, 1678, Ashmole says—

"My wife told me that Mrs. Tradescant was found drowned in her pond. She was drowned the day before at noon, as appears by some circumstance.'

"This was the same Hester Tradescant who erected the Tradescant monument in Lambeth churchyard. She was buried in the vault where her husband and his son John (who 'died in his spring') had been formerly laid.

"The table monument to the memory of the Tradescants was erected in 1662. The sculptures on the four sides are as follows—viz., on the north, a crocodile, shells, &c., and a view of some Egyptian buildings; on the south broken columns, Corinthian capitals, &c., supposed to be ruins in Greece, or some Eastern country; on the east, Tradescant's arms, on a bend three fleurs-de-lys, impaling a lion passant; on the west, a hydra, and under it a skull; various figures of trees, &c., in relievo, adorn the four corners of the tomb; over it is placed a handsome tablet of black marble. The monument, by the contribution of some friends to their memory, was in the year 1773 repaired, and (according to Sir John Hawkins) the following lines, 'formerly intended for an epitaph, inserted thereon.' Other authorities say that they were merely restored.

"Know, stranger, ere thou pass, beneath this stone
Lye John Tradescant, grandsire, father, son;
The last dy'd in his spring; the other two
Liv'd till they had travell'd Art and Nature through,
As by their choice collections may appear,
Of what is rare, in land, in sea, in air;
Whilst they (as Homer's *Iliad* in a nut)
A world of wonders in one closet shut;
These famous antiquarians that had been
Both Gardeners to the Rose and Lily Queen,
Transplanted now themselves, sleep here; and when
Angels shall with their trumpets waken men,
And fire shall purge the world, these hence shall rise,
And change this garden for a Paradise."

—(*Ibid.*, iii., 354.)

"In a visit made by Sir W. Watson and Dr. Mitchell to Tradescant's garden in 1749, an account of which is inserted in the 'Philosophical Transactions,' vol. xvi. p. 160., it appears that it had been many years totally neglected, and the house

belonging to it empty and ruined; but though the garden was quite covered with weeds, there remained among them manifest footsteps of its founder. They found there the *Borago latifolia sempervirens* of Caspar Bauhine; *Polygonatum vulgare latifolium*, C.B.; *Aristolochia clematitis recta*, C.B.; and the *Dracontium* of Dodoens. There were then remaining two trees of the *Arbutus*, which from their being so long used to our winters, did not suffer from the severe cold of 1739-40, when most of their kind were killed in England. In the orchard there was a tree of the *Rhamnus catharticus*, about 20 feet high, and nearly a foot in diameter. There are at present no traces of this garden remaining.

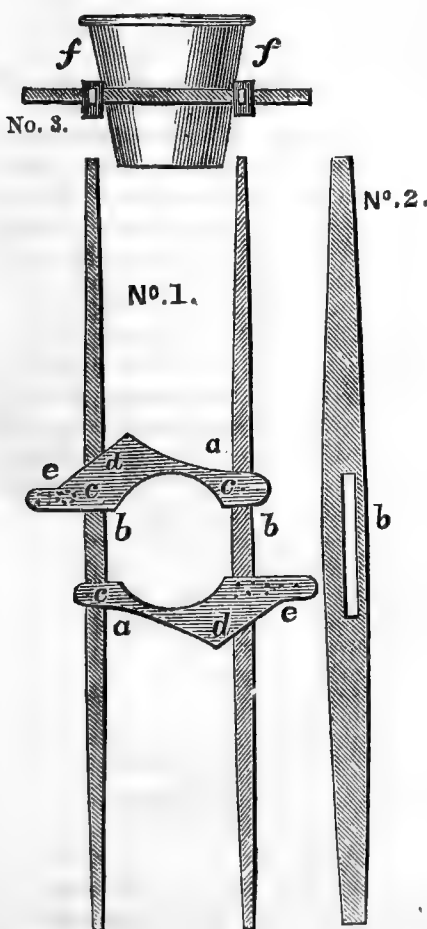
"In the Ashmolean Library is preserved (No. 1461) a folio manuscript (probably in the handwriting of the elder Tradescant) which purports to be 'The Tradescants' Orchard, illustrated in sixty-five coloured drawings of fruits, exhibiting various kinds of the Apple, Cherry, Damson, Date, Gooseberry, Peares, Peaches, Plums, Nectarines, Grapes, Hasell nutt, Quince, Strawberry, with the times of their ripening.'

"Tradescant's house, and the house adjoining, where Ashmole lived, previous to his taking possession of Tradescant's house after Mrs. Tradescant's death (see Ashmole's 'Diary'), are still standing, though they have undergone many alterations. Even there, the name of Tradescant seems forgotten; the venerable building is only known by a *nick-name*, derived most probably from its antique chimneys. I had many weary pilgrimages before I discovered the identical edifice. I have not seen the interior, but am aware that there are some traces of Ashmole in the house, but none whatever of Tradescant in either house or garden. I had a conversation with the gardener of the gentleman who now occupies it; he appeared to have an indistinct idea that an adept in his own profession had once lived there, for he observed that, 'If old What's-his-name were alive now, the Potato disease could soon be cured.' Oh! what we antiquaries meet with! He further gave me to understand that 'furriners sometimes came there wishing to see the place, but that I was the only Englishman, that he recollected, who expressed any curiosity about it.'—(*Ibid.*, iii., 394.)

SHEPHERD'S POT CARRIER.

By Mr. JAMES EADIE, Phila.

THIS is a very simple contrivance to carry large pots of flowers or plants. It consists of two common hand-spikes, in



this case about 6 feet long, $1\frac{1}{2}$ inch thick, and $3\frac{1}{2}$ inches wide, with a slit or mortice in the centre through the side to receive freely the cross or tie-pieces; and two, what I will call the pieces, being boards 1 inch thick, and wide enough to be strong, with one end fastened with a pin or bolt so as to work on a pivot in the mortice of the hand-spoke; the other end made with a bevel of about 40° , or enough to close the tie-pieces as fast as the hand-spikes are closed; then a pin on the outside of the hand-spoke put through a hole in the tie-piece fastens the whole together. The end of the mortice is made to fit the bevel of the tie-piece, so that the pressure of the pot cannot push it back. To take it off the pot, you draw out the pin from the hole on the outside of the hand-spoke, and draw the tie-piece out of the mortice. The pins are fastened to the hand-spoke by a string or chain, so that they cannot get lost. The

curve or circle in the tie-pieces need not fit the circle of the pot exactly, but may be

about a medium of what is intended to carry; if intended to carry from ten-inch to eighteen-inch pots, the curve might be 7 inches wide or 14 inches diameter.

DESCRIPTION OF FOREGOING CUT:

No. 1 shows the manner the tie-pieces lie in the mortice; *a a* are the two ties; *b b* are the mortices; *c c* are the permanent pins; *d d* are the pin-holes to hold it together; *e e* are the closing slides.

No. 2 is a side view of the hand-spoke, showing the size of the mortice.

No. 3 is a cross view, showing the manner of catching the pot; *f f* are the two pins holding the hand-spikes together.—(*American Gardener's Monthly.*)

CHEAP SEEDS.

It is generally admitted that 1860 has proved the most unpropitious season for seed-saving known for many years: consequently we buyers must be prepared for a few of the disappointments which the most careful and experienced of us meet with occasionally, but which it is our duty to guard against in the best way we can. With this object, I say, *Do not buy cheap seeds.* Depend upon it, let the articles be what they may, cheap drapery, cheap cutlery, cheap provisions, or anything else—in fact, in the way of "awful sacrifices," they are delusive, and, in general, the word "sold" is as applicable to the purchaser as to the article purchased.—JOHN STEVENS.

ALTERING TO THE KIDDEAN MODE OF HEATING.

I HAVE read the several articles on the Kiddean hot-air system with much pleasure, and in a few days hope to try it in my small house. Like Mr. Beaton's, however, my furnace is almost on a level with the flues in the greenhouse, and this is my greatest source of doubt; for, unless the volume of hot air be sufficiently above the entrance for the cold air, it is certain that the draught will be limited.

In carrying out my ideas I shall form a hot-air flue on the top of the present furnace-flue about 2 inches deep and 8 inches or 9 inches broad, covering the whole with flags. At intervals I shall insert small dampers lying horizontally on the surface of the flue, by which the hot air can be conducted to any part of the house and distributed throughout with the greatest exactness. The advantages which would appear to me to be derived from this method would be—First, the non-interference with the present method of heating by flues, the whole operation being performed whilst the flues are at work in the old way, except a few hours for the rebuilding of the fireplace and hot-air flues at sides; and, secondly, the great saving of heat which must necessarily ensue by combining the flue with the Kiddean hot-air system. The air in the hot-air flue being considerably rarefied by being confined to the surface of the furnace-flue.

Suppose the draught obtained by admitting the cold air about 3 feet below the exit of the hot air into the greenhouse be insufficient, then I would adopt Mr. Beaton's suggestion and raise a short length of pipe above each hole occupied by a damper, placing the latter on the top of it. I shall make use of small circular dampers in the shape of a star.

Even with a furnace on a level with a pit or house, it would be easy to obtain a difference in level of some 3 feet or 4 feet between the entrance for the cold air and the outlet-pipes in the house, and this difference there can be no doubt would be sufficient to cause a considerable draught.—W. P. M.

[I have just made exactly the same proposition to obtain draught, which will be in the hands of the printers along with this. (See next article.) There is no advantage in carrying the rarefied air from the chamber along the flue; for as soon as hot air enters a house from one end, as in the conservatory under Mr. Kidd, or from under the centre of a conservatory, as at Pitmaston, or from the top of the back wall, as was Mr. Penn's first plan, it diffuses itself immediately over the whole house. Now, however, that the hot air is fairly on the move, I must tell of a move of my own to set it a-going. I made a mistake in the first article I wrote on the subject without giving it a thought, for I only took up the subject from a conversation with Mr. Kidd at a Christmas party, and he had no idea that I should tell it

till he saw it in black and white. He then told me, or rather wrote to say, I made a mistake about the ash-pit ventilation, saying the draught from the ash-pit was carried into the neck of the flue. A very lucky mistake, thought I to myself, for this will surely bring us in as many cross-bow shooters as were assembled at the last Poppingay match that is recorded in "Old Mortality," and when the mark is up we shall not want challengers, nor have we, and then I put the ventilation of my own ash-pit outside on each side of the fireplace, in anticipation, as you will see at page 306. In the long run, that will catch as much heat as the way Mr. Kidd has it.—D. B.]

WOULD Mr. Beaton favour us with the following additional particulars regarding the Kiddean system—the size of the conducting-flue from the hot-air chamber to the site where the heat is required, and the size for the entrance of that flue from the hot-air chamber? Also, the size for the exit of the hot air from the flue to the site where heat is required (pits or greenhouse)? the size of the hot-air chamber being taken as the size he gave in THE COTTAGE GARDENER. I have erected some frames, and applied hot air by his description, but I find the hot air driven back through the flue, and out at the regulating-dampers by the cold air in the pits. The hot-air flue is about 6 inches by 7 inches inside, and there is a rise of $1\frac{1}{2}$ inch in $2\frac{1}{2}$ yards—the distance from the hot-air chamber to the pits.—A SUBSCRIBER.

[The sizes of air-chambers, and of openings into them, and out of them, also of the flue, pipe, or drain through which the heated air goes to the place which is to be heated, do not depend so much on the quantity of heat required as on the draught obtained. Success depends more on the rapidity of the current of hot air in the Kiddean than on its volume, when facing the opposing influence of Polmaise, to which it will always be exposed when it is attempted on the level, or with a small rise, or through a short passage. With a long passage of 75 yards the Kiddean system has worked down hill for many years in a conservatory near Worcester, and the results proved better on the Orange trees "than is generally seen" in this country, as you will see to-day in another place. You are, practically, working on the level for all the rise you have. The principle of Polmaise is so exactly the opposite from the principle of the Kiddean that the two will never cease their opposition when they meet on equal terms, as they must necessarily do when they meet on the level, or from the two ends of a very short passage. But as the power of Polmaise lies in the bottom current—the cold air draught, and the strength of the Kiddean in the top current, you can easily arrange for giving the latter the advantage, such as you would give to an honest friend—give it a lift in the world, put a pipe in its mouth where it enters the greenhouse, let the pipe be an elbow pipe, and you gain the height of the pipe in the rise of the draught. If that does not quite succeed, put on another pipe, or get one long pipe at once, with an elbow turn at the bottom, to go into the hot-air mouth; and pray let us hear how you succeed. We would rather choose for us and ours a different degree and plan of opposition: we would put a plain pipe in the hot-air mouth—that is, a straight pipe without an elbow, and we would carry the pipe across the house on the level of the ground or path, and raise it, leaning against the farthest end of the house, a couple of feet or so. The heat over that horizontal pipe, and the heat on both sides of it, would, most certainly, break Polmaise, and make a bankrupt of it; after that there would be no more opposition.

The first man of mark to whom the writer was introduced on this side of the border was the late Mr. Williams, of Pitmaston, the companion and fellow labourer of Mr. Knight, of Downton Castle; and the last thing which Mr. Williams did before your humble servant bid adieu to the Malvern Wells was to introduce the Kiddean system into his conservatory, and to take the advantage of the heating powers of spring water, about 46° , the year round in this climate, in place of coals against frost, to the extent of 10° or 12° of it, which system, after the lapse and experience of twelve years, has been reported in the "Journal of the Horticultural Society" by Mr. Thomson, of Chiswick Garden, as answering better for Orange trees than is generally seen in England; and the Kiddean system is destined to greater things than the heating of the high glass-domed conservatory at Pitmaston, near Worcester, or the circular and long oblong, conservatories at the Stud House, Hampton Court. You will see, by reference to the Pitmaston conservatory in another page,

that the Kiddean system works perfectly at the distance of 75 yards from that house—a tremendous powerful advantage in its favour, as, no doubt, at the distance of 775 yards from the furnace it will act with equal ease and efficiency.—D. BEATON.]

ROSES, THEIR PRESENT POSITION AND FUTURE PROSPECTS.

AFTER Mr. Beaton has given us so wisely his views upon Roses, it may seem needless for any other person to try a word; but the subject is so important, and so *heart-rending* at the present time, that I may be excused for looking at it with a florist's eyes and with especial reference to forthcoming exhibitions of the flower during the present season.

I have, during the past few weeks, been in a considerable number of the southern and midland counties, and have heard also from other persons residing in other districts; and from all I saw and all I have heard, I think the disastrous consequences of the late frost on roseries are beyond what any one could have conceived. In Lord Middleton's garden, near Nottingham, I did not see one single Rose alive; and the gardener told me that even the old York and Lancaster, which had been thirty years in the ground, was killed down to its roots. At my friend's, the Rev. Geo. Jeans Alford, his gardener had told him there were ninety-five dead. He went through them himself, and found twice that number gone. And wherever I have caught a sight of a standard Rose, then the same sad tale has revealed itself—either dead or so injured as to be only counted as invalids, which will never, I fear, be put into the convalescent ward; for I have generally observed, that when a standard Rose receives such a check it rarely ever recovers its ground. Thus many, having seen some nice green-looking sprays on their bushes, have concluded they must be right: but they will find on looking at the neck of the plant that it is gone there, and that this appearance of vitality will very soon give way to the brown hue of death: hence it is impossible to say as yet how far the evil may have spread. Equally fallacious will be the attempt, too, at present to decide on the relative hardiness of any variety. There is one, indeed, which seems, as far as I have seen it as yet, to hold a foremost place in this respect—Gloire de Dijon, at least as compared with its congeners, the Teas and Noisettes. While Safrano, Solfaterre, and others have "gone dead," this still shows signs of life and vigour. By-and-by we may be able to enter more minutely into particulars, and by careful comparison in different localities come to some definite result. One result, I think, has been already accomplished—the days of standard Roses are numbered. It is all very well to say that we only get such a winter once in twenty years; but if that one winter strips our gardens, and we never know when it may come, surely we must provide against it: hence I believe that which Mr. Beaton has so assiduously preached up for many years must be largely entered on—Roses on their own roots. I know one enthusiastic grower, who is so thoroughly convinced of this, that he is going to set to work at it at once and build houses for the purpose. Whether *all* Roses will thus answer remains to be proved; but I have little fear but that the skill and perseverance of our floricultural leaders will conquer whatever difficulties may surround the subject.

There is one other result that I think ought to be taken into consideration soon—I mean the manner in which Roses are to be exhibited this year. Will it be wise to look for such large numbers—to require more than one truss of a sort—to look for collections of 100 varieties? Any one who knows the difficulty of cutting flowers for an exhibition, even in a good season, will, I think, question the wisdom of looking for the same results in so unpropitious a one as the present. I see Mr. Hoyle has wisely merged the National Rose Show in the Royal Horticultural Society's one in July. This is as it should be, and is a graceful tribute to the new regime at Kensington Gore—not but that we should have a second. The authorities at the Crystal Palace, and Mr. Houghton in particular, know the full value of a grand Rose show, and that it draws thousands of visitors: hence amongst their plans for the forthcoming season is a "grand Rose Show in July." Here, doubtless, all the arrangements that tended so to popularise the exhibition of last year will be reproduced, and whatever the season will permit will be done. Might I suggest, before publishing their schedule of prizes, that it would be well to take these things into consideration—unless, indeed, I am wrong in my premises; and

if so, some of your numerous readers will set me right, but do not let us demand impossibilities of our friends.

However disastrous the present season has been to Roses, it must ultimately tend to good: the wits of growers will be sharpened up, new methods of growth will be devised, possibly pot Roses be more largely cultivated, and we shall by-and-by wonder that we thought so much of our present condition. We are a people to rise above difficulties, and to find them the surest road to success. After that terrible Crimean winter our army was better supplied and in better condition than our neighbours, who had been held up before us for our imitation; and so in another year or two we may perhaps look at the roseries as in far better condition and more lovely than ever they have been before, and our faded beauties of to-day be succeeded by others more beautiful, more fragrant, and more enduring.—D.

ENTOMOLOGICAL SOCIETY'S MEETING.

THE Entomological Society's Meeting on the 4th of February was presided over by J. W. Douglas, Esq., who had been re-elected President at the anniversary Meeting on the fourth Monday in the preceding month, when he delivered the ordinary address, which was ordered to be printed and distributed among the members. Various entomological publications were announced as having been presented to the Society since its last ordinary meeting: among these were the "Transactions" of the Belgian Entomological Society. The President nominated Messrs. Lubbock, W. W. Saunders, and Waterhouse to act as his Vice-Presidents during the ensuing year.

Mr. Samuel Stevens exhibited a number of very beautiful Lepidoptera recently received from Port Natal, including *Smerinthus Dumolinii*, the most beautiful species of Sphingidæ hitherto discovered. He also exhibited some beautiful species of Tinea from India.

Mr. Frederick Bond exhibited a new British Moth of great elegance, *Cidaria reticularia*, taken during the preceding summer in the Lake district; it is nearly allied to *C. silacearia*.

Mr. Ianson exhibited a new British species of Rove Beetle, *Philonthus punctiventris* of Kraatz, taken near London by Mr. Edwin Shepherd.

Mr. F. Walker exhibited some very minute cases, supposed to be those of Dipterous pupæ (belonging to the genus *Phora*?) found on the inside of the coarse papyraceous covering of a hornet's nest; also the larvæ of a Dipterous insect (*Anthomyia canicularia* or an allied species), found on the refuse at the bottom of the nest.

A memoir by Vernon Wollaston, Esq., was read, containing descriptions of the species of Weevils (*Cossonides*), taken in the Canary Islands, including a very remarkable new genus with singularly formed legs.

ROYAL HORTICULTURAL SOCIETY.

WE understand that the trial crops to be cultivated this season in the garden at Chiswick are—Broccoli, Kidney Beans, Cucumbers, Lettuce, Celery, and Beet. Those persons who possess any novelties of either of these vegetables would do well to forward them as early as possible to Mr. Eyles, the superintendent, so that their merits may be proved. The collection of Peas will again be grown this season for the benefit of the Fellows and their friends who may wish to examine the different varieties, and if there are any sorts which are either new or have not been reported upon the Society would be glad to have them.

TO CORRESPONDENTS.

ASPLENIUM MARINUM CULTURE (*Deodar*).—We cannot give you better directions than the following, extracted from "British Ferns," published at our office:—"It should be grown in a well-drained pot in a mixture of equal parts sand, small fragments of brick and peat, and be kept in the most shady part of a greenhouse where the temperature never falls below 35°. The water employed should have half an ounce of common salt dissolved in a gallon. This Fern should not be watered over the leaves, though it delights in a moist atmosphere." Its native place being rocks near the seashore explains why it requires a little salt in the water applied to its roots. Such saline water would not benefit the other Ferns you mention as growing under the same glass shade with it.

VARIOUS (*M. Villiers*).—The Rochelle Raspberry is cultivated the same as the common Raspberry. We know nothing about the periodical you name. There is no good work upon Rabbits; by degrees you will have all the information you need in our columns, and when completed we shall publish that information in a separate volume.

GOLD AND SILVER FISH (*J. M.*).—We have kept these in a glass vase when taken direct from the tank in which they were bred. River water is better than spring water for them.

ROOT-GRAFTING (*Constant Reader*).—It is not more certain of success than either budding or grafting on an aged stock; nor do trees so grafted come into bearing earlier, nor are they more easily kept dwarf.

DUNG OF POULTRY, &c. (*H. G. L.*).—All these excrementitious manures are valuable; and every one who keeps the animals you specify should preserve their dung in a heap, and if under cover, or covered with earth, all the better. The dung of poultry mixed with water makes a good liquid manure. It would not be a good plan to put such manures at the bottom of Strawberry-pots; much better use the usual soil, and apply the manure in a liquid form.

VINE DISEASE AND MILDEW (*M. H. W.*).—They are one and the same. It is a very loose mode of expression to speak of it as "the Vine disease," and no better proof of this can be adduced than your own case, in which the berries "when nearly three-parts grown discolour and shrivel up." This we consider a case of *shanking*, and not of mildew. There is something wrong at the roots. These have descended into a bad, wet soil; or if planted outside they are too cold. In either case we have often pointed out the appropriate remedies.

GRUB IN SOIL (*Amateur, Thornhill Collieries*).—We found nothing alive in the box; but we have little doubt that it is the larva of *Otiorynchus vastator*, and has frequently been mentioned in our columns.

TAN FOR A HOTBED (*W. N. A.*).—Get the tan fresh and pretty dry, and throw it into a heap; when it heats turn it over, and in a few days it will be fit for use. (See articles on "Forcing.") The mode you propose with lime is the best that could be used; but unless well decomposed, and thoroughly well heated and mixed with the quicklime to extract the acid, it will not be of much benefit to any crop.

CLIMBERS, &c., FOR AN AVIARY (*B. B.*).—We think variegated Ivies or evergreen Honeysuckles would be your best climbers; and for the low plants we should prefer *Rhododendrons* or *Perpetual Roses*.

EPACRIS UNHEALTHY (*A Constant Reader*).—*Epacris* do not like being cut down below the bases of last season's shoots; otherwise, if worms are avoided, the plan will do. The Vine roots outside are probably buried too deep; but it is as likely they are too wet and cold; and, therefore, there being no root-growth outside, the Vines are compelled to make root-growth inside. The remedy is obvious.

MITCHELL'S MINERAL BLACK PAINT (*G. W. H.*).—If the smell you complain of in your vinery and Peach-house is that of gas tar, and very powerful, it will be injurious to the young leaves of the trees; but as you only painted the trellis, this can hardly be so, and a little extra ventilation will remove all danger, probably. The smell of common tar is not injurious to the leaves.

LENTIL (*Chirurgus*).—There are two kinds—the white and the yellow. The latter produces the most fodder, and in France it is cultivated for its seeds, which are used in soups. It prefers a light, moderately fertile soil, such as will grow Peas well. Sow in March or very early in April, in drills 15 inches apart. The pods are ready for gathering in August; if left until ripe they open spontaneously, and shed their seed. The pods become reddish when fit for gathering. The seeds are best kept in their pods, and shelled as required.

HARDY ROSES FOR STANDARDS (*A Constant Subscriber*).—Eight hardy red Hybrid Perpetual Roses for standards—1, Anna Alexief; 2, Anna de Diesbach; 3, Oriflamme de St. Louis; 4, Altesse Impériale; 5, Comtesse de Chabillant; 6, Evêque de Nîmes; 7, Géant des Batailles; and 8, Jules Margottin; these comprise all the red shades, and are of the best and newest. Eight white and blush white Roses, or what we call light Roses, as real hardy and really white Roses are very scarce indeed—1, Bouquet de Marie; 2, Doctor Herron; 3, Madame Vidot; 4, Mrs. Rivers; 5, Impératrice Eugénie; 6, Louise Magnan; 7, Mère de St. Louis; 8, Princesse Olympie, or else Queen Victoria.

PROPAGATING CASE (*J. B.*).—Your plan will answer admirably; but you would succeed better if you had a similar case without any heat in which to harden off your seedlings and cuttings before exposing them to the air of the room. We presume you can get light and sun as wanted. We would not use sawdust at all, but clean silver sand. The sawdust will be apt to bother you with fungus, &c., and if not particular it will clog and stop up the holes in the bottom of the pots.

FORCING NEAPOLITAN VIOLETS EARLY (*G. H.*).—Take cuttings or divisions in March and April, plant out in a bed in May, 6 inches or 8 inches apart, in light, rich soil; water as needed during summer; nip off every runner as it appears; and in September or October plant out in a pit where damp can be kept off by a little fire heat, or pot separately, so as to place in a greenhouse warmed to an average of from 40° to 45°. Too much heat will defeat the object.

SOILS FOR VARIOUS PLANTS (*Midland*).—For *Clianthus*, *Mandevilla*, and *Passiflora*, fibry loam, heath soil, and a little leaf mould. For pruning ditto, shorten the *Clianthus* when done flowering; and the others when established do best when spurred back to a bud or two in winter or spring. The *Gesnera*, *Gloxinia*, and *Achimenes* like a richer soil, such as one part leaf mould, sweet, one part heath soil, one part fibry loam, half part old cowdung, and half part silver sand. The *Chlidanthus* requires rich loam, and to be kept dry all the winter months.

WATER MELONS (*W. H.*).—We have grown such called Water Melons in the usual way, and also in a large basket, placed in a tub with water half way up the basket, and alike with success. We hardly ever found one of these Melons at all equal to those ordinarily grown for their flavour. We should think the scent of the paint would be off before the leaves were much expanded. The smell will be moderated by placing vessels of water in the house, and giving more heat and more air in consequence. If there is any dallying with the painting we should expect the Vines to suffer a little, unless plenty of air were given.

CAMELLIAS SICKLY—AIR FOR BLOOMING VINES AND STRAWBERRIES (*Mathiola*).—If the worms are gone, and the drainage is all right, the soil would soon be right. However, the plan proposed can do no harm, though the washing part seems hardly necessary under the circumstances. We

prefer that neither Strawberries nor Vines should be too dry or too damp as respects the atmosphere when in bloom. We have dewed Strawberries at such times with good effect. However, we would have Strawberries in a drier atmosphere than Vines in the same position. In Vines, when the air is greatly saturated the pollen clogs; if the air is very dry, the little cap that covers the anthers is fixed there over them; a little more moisture causes the cap to fly off, and set the anther-boxes at liberty. The middle path is, therefore, the best. We agree with you as to gardeners' houses. In late volumes you will find that Mr. Fish corroborates strongly Mr. Appleby's ideas on the subject, and both speak from experience and personal observation.

MILDEW ON GREENHOUSE PLANTS (*J. B.*).—Dust with flowers of sulphur your mildewed Geraniums, Ferns, &c., and ventilate freely night and day when temperature not too low. Your flue-heated miniature greenhouse will preserve plants through the winter, if you take care that the temperature never falls below 35° at night. Much might easily be done by covering such a small house.

POULTRY AND BEE-KEEPER'S CHRONICLE.

TAMED WILD FOWL.

THERE is nothing more contagious than the love of natural history, nor do we believe there is anything more deeply implanted in the human mind than the love of animals. We are not now going into the question why or how this exists, but we wish to remove a difficulty. Many people would like to keep some tame wild fowl, but they think it impossible—they imagine such luxuries form part of the privileges of those who have

“Thirty large domains,
Forty grand châteaux,
Fifty fertile plains,
Sixty suits of clothes,
Lots of gold and silver,” &c.

No such thing. We lately saw a pair of Mandarin and a pair of Carolina Ducks revelling in luxury. They were tenants of a washing-tub sunk in the ground. Nothing can give an idea of the facility with which things can be kept so easily as the description of places where they have been successfully domesticated and reared. Thus, almost the only man who bred both Grouse and Black Game in confinement was an artist living in the suburbs of London, and having a small, long strip of garden which he devoted to them. We have no hesitation in saying there is hardly any place where wild fowl cannot be kept; but as in nine out of ten there are advantages that only require to be made use of, we shall endeavour to describe such a place as may be within reach of all who have a garden and water.

We do not advise too small a pond. Few people are content with only one pair, although the pond is made for that number only. A round pond 4 feet in diameter is quite large enough for one or two pairs of any kind of wild fowl. After the remark we have just made, we need hardly add we advise you, if you can, to make it larger. It need not be more than 2 feet deep in any part. It may be that depth everywhere, except at two places, which will serve for landing-places for the birds and scours on which they may be fed. These will be cut through the bank, so that the Ducks can swim out. When they are tired they cannot always climb up a bank, and they drown. The enclosure around the pond must depend on the space that is available; but for one or two pairs, or three, 3 feet clear from the pond all round will be enough, but if there is more so much the better. It should be greensward; and we will mention here a point that escaped us before—the scours or landing-places should be pitched or floored with large gravel stones well rammed down. If this is not done it is a dirty, muddy place; and, as the food will always be thrown here, it is economical. The birds can see and find every grain; whereas, if it is thrown in mud, much of it will be lost. Ducks do not require a shady place, but they like one, and, in common with nearly all others, they like a shelter from heat and from wind. If, then, some low-branching shrubs can be enclosed so much the better. Some contrivance should be adopted to enable the pond to be emptied and refilled, that the water may be clean. It is very amusing to watch divers in clear water, when they dive after every grain that is thrown to them. The fence that surrounds the pond should be 3 feet high, not less—a properly pinioned bird cannot get over this. An inexpensive and safe fence is a wattled hurdle hedge all round. If looked after it will last for years. The grass in the enclosure soon forms a covert enough to hide any Duck. The Carolina and Mandarin are the handsomest of all we have in England; both have their admirers.

We have written the foregoing partly in answer to a query, and will continue the subject next week.

TAUNTON AND SOMERSET POULTRY ASSOCIATION.

THE patronage under which this Association purpose holding their Exhibition in June next, and the promises of support forwarded to the Secretary, Mr. Charles Ballance, warrant the expectation that it will be very successful. The prizes are not high, but they are well classified; and we see that, instead of the first prizes of £1, pieces of plate will be awarded valued two guineas each, we suppose at the option of the winners. There is also this assurance in the “Regulations,” “all the prizes awarded will be paid by the Honorary Secretary the week after the Exhibition.”

We also notice that little more than half the entrance-fee paid for the large varieties of poultry is charged for Bantams, Pigeons, and Chickens of 1861.

The Bristol and Exeter Railway have consented to convey the poultry to and from the Show for a single fare, and it is hoped that the Great Western will do likewise.

IMPORTATION OF EGGS.

IT is a marvel and a just cause of reproach that we cannot produce eggs sufficient for our own consumption; so far, indeed, from producing a sufficient number that every year we have to import from the Continent an additional number of millions. The country residents in the British islands who do not keep poultry ought to blush as they peruse the following table:—

| EGGS IMPORTED IN THE YEARS SPECIFIED. | |
|---------------------------------------|-------------|
| 1857 | 127,039,600 |
| 1858 | 134,684,800 |
| 1859 | 148,631,000 |
| 1860 | 167,695,200 |

So that the number of eggs imported during the last four years has averaged more than one hundred and forty-four millions yearly!

SILVER GREY DORKINGS.

WE breeders of Silver Grey Dorkings are really puzzled to know what points the judges require in a cock of that breed. After the Birmingham Show we were told there must be no white feathers in the tail, &c.; and at the Liverpool Show they give the first prize to a pen, the cock in which had the roots of his sickle-feathers white, from 4 inches to 6 inches up; and in your remarks upon the Show, you state the pen was perfect in feather. Really, Mr. Editor, it is too bad to blow hot and cold in this way: after such decisions and such comments with the previous hints given, how do we know what birds to breed and select?

Now, I will give you what points, in my opinion, a Silver Grey cock should have. 1st, his breast should be black; 2nd, his tail should be black—I would on no account give a prize to a bird with white in his tail; 3rd, his hackle should be light—many of the birds shown have too dark hackles; 4th, his comb should be perfectly upright—at Birmingham many of the prize birds had drooping combs; 5th, he may have reddish-brown feathers on his wing, as not one true Silver Grey Dorking is without them—in fact, not one in a hundred. Those that have no reddish-brown feathers are not pure Silver Greys, but crossed with the Grey, and they invariably have dark hackles, while a true-bred Silver Grey has always (though it may be covered by his hackle), a few brown feathers on his saddle; and the hen from the same hatch is pure in feather, with no stain on her wings. I have enlarged on this head, as it is foolish to insist on a point being an imperfection which is a characteristic of the breed. Every breeder of Silver Greys knows that it is so, and that if he must breed to avoid it, he immediately gets his hens imperfect in feather, his cocks with dark hackles, white tails, &c. —A BREEDER OF SILVER GREYS.

[We have watched this class narrowly, taking much interest in it, and having advocated its formation. We think our correspondent is in error. We looked closely at the prize birds at Liverpool—there was no white in the tail. We thought it one of the best-coloured pens we had seen. We saw nothing to complain of at Birmingham. Some of the combs dropped a little, which was a defect. We think the best answer we can give is, Breed such birds as the first-prize pens at Birmingham, Liverpool, and Worcester. Lord Hill bred them for years; they were

then called Lord Hill's colour. Since then, not only Lord Hill, but Lady Desvœux, the Hon. W. W. Vernon, Capt. Hornby, Mr. Wakefield, Mr. Cargey, and others have bred and exhibited them successfully. If their numbers are not greater, it is not because they are so difficult to breed, but because they are neither so large nor so much in request as the common Greys. With regard to the chestnut patch, we have not heard that it was a disqualification; but we think where birds can be produced as some are, pure in colour and without the patch, they are preferable. Years ago this same question was agitated about Silver-pencilled Hamburgs. Almost all the imported cocks had a chestnut patch on the wing, and many of our best judges thought such birds threw the best-coloured chickens. We went to the fountain head—to the most successful breeder we ever had—Mr. Archer, and asked him whether this patch had not to do with the colour of his birds; he laughingly said, "Just as much as blowing down a popgun, before putting in the pellet, has to do with the report." He never used one of these birds. We think the question of necessary points is fully understood, and the increase in the entries proves it. We agree with our correspondent that *any white feathers* are wrong, and we will add one necessary point which he does not mention—the silver hackle of the hens. This was lamentably deficient in many of the pens at Liverpool, where, instead of being black and white-striped, they were black and brown.]

DISEASES CAUSED BY ERGOT IN GRASSES.

WE too often neglect things which are to us of the greatest importance. How few agriculturists are there who have ever seen a specimen of ergot, although it is rather too common in some damp pastures; and I fear there are few veterinary surgeons who can detect disease in cattle occasioned by their eating ergot along with their pasture grasses. In one of my railway rides I accidentally met a person who has written a work on grasses; and he assured me that he had never collected a specimen or seen ergoted grasses. I pointed out some damp meadows, and told him that a careful examination of the grasses growing near the hedge-rows would enable him to discover more ergot than he might imagine.

It is probable that ergot is the cause of much greater suffering to cattle than agriculturists are aware of. That it is one of the causes of barrenness I am certain. I know a pasture-field where, for the last ten years, two-thirds of all cattle pastured in it have been barren. Last year the occupier removed his cows the beginning of August into another field, and at the beginning of winter all were in calf. In this field, heifers which ran out in winter were subject to abortions, caused by ergot which remained in the chaff-scales and were eaten along with the pasture-grasses. This winter I found in the snow, during Christmas week, *Lolium perenne* tenue—slender perennial rye grass, more infected with ergot than I remember ever seeing it. Cattle which graze in pastures infected with ergot are generally in poor condition, and when sold fetch little money. Graziers who purchase cattle for feeding cannot be too careful in not purchasing cattle which have been pastured in meadows where ergot is to be found. Those persons who have the misfortune to do so will find that they will have to keep them a long time before any change takes place in their condition: they then fat slowly, and rarely in a satisfactory manner. It is said that draining is the chief preventive of ergot. In a strong clay subsoil I have found it growing on the top of a good stone drain.—RUSTIC ROBIN.

[We are glad of the opportunity this communication offers to reply to various inquiries which have reached us recently relative to very extraordinary phenomena occurring in certain districts. In two localities—one in England and the other in Ireland—cattle pastured in certain fields lose their hair and their hoofs; in another district we hear that poultry (Dorkings), having an extensive grass run last autumn all laid shell-less eggs, and this year the pullets are evidently over-excited in their egg-organs, the eggs are distorted, and addled eggs almost without exception characterise every sitting.

We have been asked to detect the cause of these afflictions and failures, and we have but one reply to make to all—we believe the seeds of the grasses in all these districts are affected with ergot. It may be necessary to explain to some of our readers that ergot is a fungoid substance, which completely changes the composition of the grass seed which it attacks. It is known scientifically as *Spermatia clavus*, and occurs most commonly

in damp, low-lying soils, and in years characterised by wet seasons. It was first observed in the seed of rye; and bread made from such seed has caused many fatal epidemics in the north of Europe. Cattle fed upon ergoted grass or corn seeds are liable to paralysed legs and extreme debility. In South America hogs and mules fed upon ergoted maize lose their hoofs and hair. Hens having ergoted rye lay shell-less eggs (*Christison on Poisons*, p. 788; *Edinburgh Med. and Surg. Journal*, vol. liii). Perrault relates that persons who ate bread made of corn thus diseased lost their fingers, noses, and even hands by a peculiar gangrene. In Columbia, Roulin relates that people eating ergoted maize lose their hair and teeth, but are never attacked by gangrene.

When the ergot has attacked the seeds of a grass it appears on them in the form of very small, purplish, pin-shaped bodies. They have been observed upon the sides of the seeds of rye-grass, cocksfoot, and foxtail grasses, besides on those of the more reed-like genera, and on those of wheat and barley as well as Rye. There is no doubt that seeds so affected, eaten extensively by cows, ewes, or mares, would cause them to abort; and poultry eating them would lay imperfect eggs.—EDS. C. G.]

PIGEONS.

My position in the centre of a large town excludes me from any great amount of practical interest in the greatest portion of your admirable periodical. Even the poultry department is to me a sealed book; but even here there is the never-failing resource of all who wish for a trace of country life and animated nature, far away from green fields and quiet lanes—viz., keeping Pigeons. I can hardly aspire to the dignity of a thorough-bred "fancier;" but I have kept Pigeons for some years, and have found them a constant source of pleasure and amusement.

For the last year I have subscribed to your paper, exclusively for the information I might meet with in its columns respecting my favourite "hobby;" but the other day I was struck with the idea, that for some time past this information had been both uninteresting and scanty. At the same time another idea struck me, and that was, that if such of your readers as were in the "fancy" would use your paper as the medium of communicating their experience to each other, a large fund of useful and practical information would be thrown open, and would be highly appreciated by all who, like myself, wish to keep only good birds, but require the assistance of those of greater experience in their selection and management. I feel sure my suggestion will meet with your approval, and that you will, either by the insertion of this letter or otherwise, introduce the subject to your readers, and ascertain whether a sufficient number take such an interest in it as to warrant you in devoting a certain space weekly to "Pigeons."

As I find great difference in the prize birds at various Shows, I am puzzled to know what are the main points kept in view in deciding on the merits of different birds. For instance: At the Preston Show last year, the first prize to Turbits was given to a small pair with smooth heads; the latter being apparently the main point, as they were inferior in every other respect except size. At the Show here, last week, the prize was awarded to a pair with turned crowns. Which is right? Should Turbits, Frillbacks, and Barbs, be looked on as improved or injured by turned crowns?—COLUMBARIAN.

[The turn crown in Pigeons is a feature introduced by those amateurs that prefer novelty to purity—that is to say, in such birds as have properties in the head, as, for instance, the Carrier, Tumbler, Barb, Turbit, and Owl: in these I should regard a turn crown as a disadvantage. Fantails and Powters are, as a rule, smooth-headed, and I do not regard a turn crown as an improvement to either of these birds; yet the Germans breed them mostly with turned crowns, as well as Carriers, Barbs, Turbits, Owls, and even occasionally Tumblers.

The turn crown belongs to the Trumpeter and the Jacobin—they must not be without it. The Frillback is the better for it, and the inferior Toys, as Nuns, Swallows, Schwabs, Priests, &c., are improved by any extra embellishment in that way; because, as their only property is feather, they have nothing to lose by the adoption. The Turbit has its chief property in the head, flat, broad, angular, and the orbit of the eyes much raised. Indeed, the head should be shaped like a frog's. The nearer the resemblance in shape the more valuable the Turbit. Turbits have been so much neglected of late years, that this property

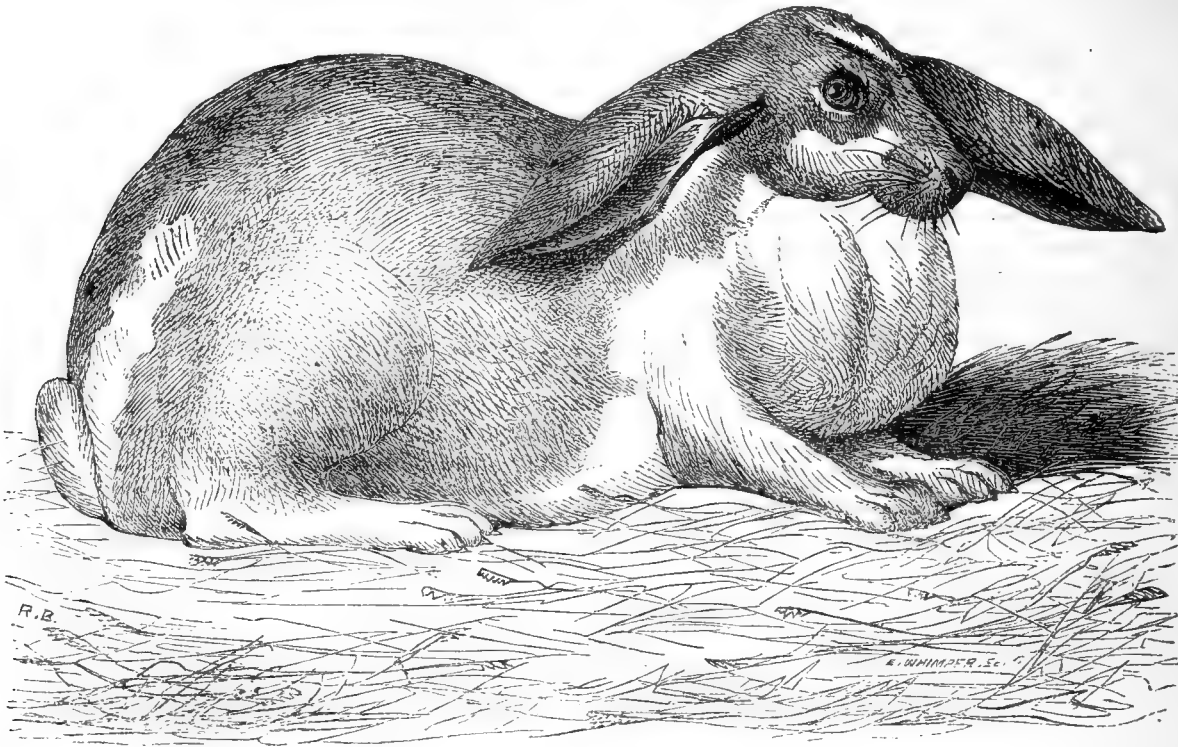
has been much lost sight of—amateurs have alone looked to feather. So it is with the Owl; the hooked beak and bolting eye have been sacrificed to colour. The thick head of the Barb has sometimes been spoiled, and the shape altered by the cultivation of the turned crown; and the Fantails likewise suffer

in length and thinness of neck from the same cause.—B. P. BRENT.

We need scarcely add, in furtherance of our correspondent's remarks, that we shall willingly insert communications relative to Pigeons.]

THE RABBIT (LEPUS CUNICULUS): ITS HISTORY, VARIETIES, AND MANAGEMENT.

(Continued from page 327.)



THE OAR-LOP.

THE Oar-Lop, so called from the ears in this position resembling the two oars of a boat resting in the rowlocks in the hands of a waterman. This is particularly admired by some fanciers, but is as strongly condemned by others. It bears a more close resemblance to the perfect lop than any other variety of this breed.

Many Rabbits of the best blood will carry their ears in this position, but are unfit for exhibition, unless to compete for weight, in which class the ears are not considered. At any rate, the ears being thus carried should not be a reason for rejecting from the breeding stock Rabbits well formed and fine in every

other respect, as they are as likely to produce valuable stock as their more perfect relations.

It is seldom, if ever, that a litter of young Rabbits is produced in which every specimen is perfect. Some will be found defective in length of ear, carriage of ear, or colour, although the parents be of the best blood.

It may be, however, that this peculiarity is the result of a cross with the common Rabbit, though, perhaps, at some distant period. If this be the case, it is better to fatten such Rabbits for the table, and introduce animals of a purer strain as a fresh and improving cross.—R. S. S.

(To be continued.)

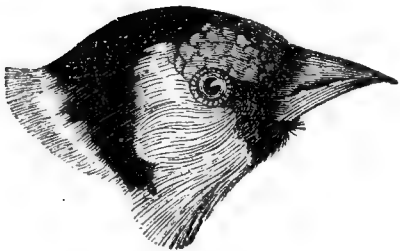
THE CANARY AND THE BRITISH FINCHES.

(Continued from page 327.)

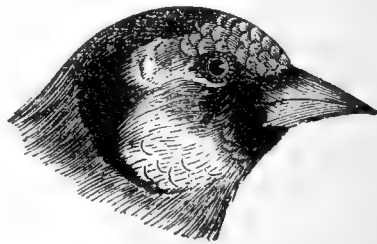
8.—THE GOLDFINCH (*Fringilla carduelis*).

German, Steiglitz or Distelfink.

French, Chardonneret.



MALF.



FEMALE.

OF all the British Finches the Goldfinch is the prettiest and most diversified in the gay colouring of its plumage. Its docility, attractive qualities, and pleasing merry song, cause it to be a general favourite.

The German name of Distelfink signifies Thistlefinch, by which name it is also known in this country, as well as by the appellations of Goldie, Goldspink, or Proud Tailor.

It is a common bird, universally distributed over England and

Europe. The beak is conical and pointed, more sharply so than any other of our Finches. In colour whitish with a black tip which is larger in summer when the bird is in song than in autumn or winter. The tail is rather short in proportion to the size of the bird. The plumage of the upper part of the body a rich olive brown, varying in shade to almost white on the under parts. The wings and tail jet black; the primary feathers of the wings are of a golden yellow on the base of the outer web.

and the larger wing-coverts have also a yellowish margin, which form a yellow spot on the wings. At the extremities of the primary wing and tail-feathers are small light spots, and some of the outer tail-feathers have a white spot on the inner vane. In front of the head round the base of the bill is a band of bright carmine red, intersected at the gape or opening of the mouth by a black spot; the top of the head is black, and the cheeks whitish.

The female is less bright in plumage than the male, the black spot at the corner of the beak inclines to grey, and the shoulders of the wings are tinged with brown.

The young in their first plumage are of a greyish-brown on the head and back, the wings and tail alone resembling the adult plumage. While in their nestling feathers they are designated Greypates.

Goldfinches breed rather late in the season, usually about May. The nest is a neat and elegant construction of moss, lichen, and hair, and lined with fine hair or vegetable down. The position of the nest is various, some varieties preferring the fruit trees in gardens or orchards, while others select the top of a high tree, or descend to a quickset hedge or low shrub. The eggs, four to six in number, are whitish, having a pale bluish-green tinge slightly spotted with pale red, and black specks towards the larger end.

Although naturalists only acknowledge one species, yet there are several distinct or permanent varieties of this bird which are well known to bird fanciers, and distinguished by various appellations. The large black-shouldered Goldfinch that frequents gardens and orchards, building its nest in fruit trees, is called the Pear-tree Goldfinch, and from its size, stoutness, and docility, is most prized by Mule breeders. This bird is recognised by its greater size, the blackness of the shoulders of the wings, the whiteness of the beak, and light colour of the legs. Another common and well-marked variety is the little green-winged Goldfinch. This variety is much shyer, and builds its nest at the top of some tall tree. The beak is much darker, the legs almost black, and the shoulders of the wings tinged with green in the male as well as the female. It is much smaller, less tractable, and on account of its restless, mischievous temperament, is not a desirable bird to breed from in confinement.

There are also a large green-winged Goldfinch, but this is rare; and a smaller black-winged variety, which is more numerous.

In addition to these, there are accidental varieties occasionally met with—as the Cheveral, Cheviot Goldfinch, which has a white mark dividing the red below the beak. These are not very numerous, occurring about one in a thousand, and are eagerly sought by fanciers. The Chibald, or Ring-headed Goldfinch, is still less common, and is distinguished by a white ring round the head.

Bechstein mentions other accidental variations, as the yellow-breasted Goldfinch, quite white, white-headed, black-headed, and black, which last is not unfrequently owing to a diseased state at moulting time, often arising from feeding on too much hempseed.

Persons residing in the country can scarcely fail to become acquainted with the merry Goldfinch, his quick, jerking, undulatory flight, and dappled appearance as he flies from tree to tree in the bright sunshine. His shrill cry as he calls to his fellows, *pitch it, pitch it, pitch it here*; or when perched on an upper bough he gives vent to his amorous lay, pressing his sides with his wings, with spread tail and rocking movement he twists his body from side to side. His song though not very long is frequently repeated, and is delivered in a quick, merry, excited manner, usually of three stanzas, which may be likened to *sweet, a sweet, a sweeter dear, twideler, twideler, twideler, vitz, kiss, kiss, kiss, Marie*.

Mr. Hipkins in describing the fancier's song of the Goldfinch says, "The properties were, sepating, sublinking, and chulyming or churming. There are but few birds at present that excel in the latter property, and the owners highly prize them. The running song was, Sublink, sublink, churmy, churmy, chink (or churmy chay), sepate, sepate, churmy, chay, widdle, widdle, hay, &c."

The present favourite song he says is, as read by fanciers, *Sipit, slam, slam, widdle, widdle, siwity*; of which jerk some birds do the hussel chay, and the sipit, widdle, widdle, slam, am, widdle, chay."

He further observes, "Slamming was formerly disregarded, not being considered a good property, as birds singing their

natural note were distinctively designated rough slamming birds. The song of the latter, however, is not so distinct and clear as that of birds which have been taught; but there is not to the uninitiated so marked a difference between the songs of the taught and untaught Goldfinches when heard together, as there is between those of the fuzzy and the song Linnet."

The Goldfinch, I believe, is strictly a vegetarian in diet, the seeds of thistles, dandelion, groundsel, and other weeds forming his bill of fare: consequently, we hear of no complaints from the farmer against this pretty little bird, which is rather remarkable, as nearly every bird is condemned by the agricultural class without reference to what they eat. After the breeding season they congregate in small flights and frequent the rough and waste places where such seeds are to be found, on which they feed; and towards autumn these flights unite into larger ones, which move about in search of food, and during these autumn and spring wanderings the bird catchers secure great numbers in the clap-nets, which they sell for about 6s. per dozen in London. The retail price rising in proportion to the time they have been in confinement and accustomed to their new mode of life. They are also frequently taken by a trap-cage with a call-bird beneath. When first taken the seed given is usually hemp and rapeseed, and they should be gradually inured to canary seed. Hempseed is too exciting, and rape too pungent, both contain too much oil to make them proper food for a bird deprived of liberty. Canary seed should, therefore, form their chief food with clean water and sand. In addition they may have plenty of ripe thistle and dandelion heads, groundsel, shepherd's purse, and chickweed, a little maw seed occasionally, or a few grains of hemp by way of a treat.—B. P. BRENT.

(To be continued.)

FALL (AUTUMN) MANAGEMENT OF BEES.

IN vol. vi., No. 19, of the *Prairie Farmer*, is an article on the "fall management of bees," which I cannot suffer to pass without comment. The writer of the article evidently uses only the common box-hive, as his directions for manipulating with or uniting bees tend to show. I would here remark that this writer, and all others who use the common surplus box-hives— notwithstanding they are far more valuable than many of the fanciful, new-fangled patented bee-hives—are certainly behind the age. Hives having moveable frames, properly constructed and of proper form and shape, are now all the rage; and no intelligent bee-keeper who fully understands the value of such hives will use any other. Reader, do not say that I have an "axe to grind," is the reason that I am influenced thus to speak, for such is not the case. My object in noticing the article to which allusion has been made, is simply to give my method of managing the four colonies of bees spoken of by the writer of the article, by means of moveable frame-hives. In this way the comparative value of both methods can be seen at a glance. The writer of that article says:—

"Mr. A. has four hives of bees. Two of them are heavy and populous, and a little care is all they need. The third is nearly filled with comb, a moderate quantity of bees, with somewhere from 5 lbs. to 8 lbs. of honey—about half enough to winter them on. The fourth is not half full of comb, about as many bees as the third, and, perhaps, 2 lbs. or 3 lbs. of honey. Now, how are these last two swarms to be the most profitably disposed of? I say, Unite and feed them. But how is this to be done? In the right way, to be sure. In the first place take No. 3, raise the hive gently about an inch on one side, and blow some mild smoke under it (punk smoke is as good as any for this purpose). Then set the hive upon the ground in front of the stand and drum smartly for a few minutes, being very careful not to drum so hard as to break or loosen the comb. Then shake the bees out upon a wide board or sheet—need not be particular to get out every bee, because they are soon to be returned to the hive again. Now, treat No. 4 in the same way, being careful to get the bees out very clean. Now look out for the queen in No. 4. When found remove her as soon as possible, unless you know the queen in No. 3 to be an old one: in this case remove the queen in No. 3 instead of No. 4. Then shake the bees from No. 4 upon those from No. 3, and hive them in hive No. 3, as in swarming."

My method of uniting "No. 3," and "No. 4," with frame-hives, is as follows:—Open both hives and subdue by the smoke of punk, then sprinkle the bees thoroughly with diluted honey,

scented with a few drops of essence of peppermint. Now lift out the frames of comb and bees from either hive, and place them within the other, and the operation of uniting them is done. There will be no need of looking for either of the queens, unless one be an old and the other a young queen, in which case the combs should be examined, and the old queen removed or killed; for there will only one remain as soon as the queens come in contact. All being scented alike by means of the essence, they will unite with but little contention.

Now, how shall we feed them so that they will have a sufficiency to winter them, as they have only about 10lbs. "Two of them are heavy and populous," and hence ought to spare at least a frame each, full of honey. The frames I use hold about 7 lbs. each: hence two frames added to the duplex colony would make their stores equal to 24lbs.—the requisite quantity in general to winter them safely. This method of feeding bees saves them labour; besides, bees from neighbouring stocks will not be induced to rob them, as when fed as the writer of the above article recommends. It will also be observed that this writer says that one swarm has from "5 lbs. to 8 lbs. of honey—about half enough to winter them on." Where he resides this may be true, but in a majority of the northern states it would be about one-third, as it is not safe to have much less than 25 lbs. —M. M. BALDRIDGE, *Middleport, Niagara Co., N.Y.*—(*Prairie Farmer.*)

[The proposition to make use of the scent of peppermint for the purpose of facilitating the autumnal union of weak stocks has at any rate the merit of novelty. It is also possible that it may not be without its use in some cases, although when bees are once subdued by smoke of any kind, there is little fear of a serious quarrel in uniting. What substance may come under the denomination of "punk" we have no means of determining, but should not be surprised to find it an American synonyme for cowdung or something of that kind.]

Our friends on the other side of the Atlantic have, doubtless, excellent honey-harvests, although the long winter of the northern states is pretty clearly hinted at in the estimate of 24lbs. of honey being required to provision each colony. That their hives are larger than our English ones, is also tolerably evident from the fact that each comb when full is expected to weigh about 7 lbs., and that "heavy and populous" stocks, "ought to spare at least a frame each full of honey" without injury.

Hives having moveable frames are stated to be "all the rage" in America, and there can be no doubt that bar-hives of some sort are absolutely essentials in scientific bee-keeping. Hives with moveable frames instead of simple bars have recently been highly lauded as facilitating the extraction of combs—not, perhaps, without some show of reason; although any one accustomed to the manipulation of comb-bars, may be excused for smiling at the trivial nature of the difficulty which is thus supposed to be overcome. On the other side must be set the inconveniences arising from the increased size of boxes which is rendered necessary by the use of frames, to say nothing of their greater cost, whilst back and front windows are rendered almost useless from affording little more than an exterior view of a wide-barred wooden gridiron.—A DEVONSHIRE BEE-KEEPER.]

HOW IT FARED WITH "B. & W.'s" APIARY IN 1860.

It is a long time since I have troubled the columns of THE COTTAGE GARDENER, whence, perhaps, your readers may have inferred that, having too sad a tale of disaster as an apiarian to communicate, I have on that account continued silent. It is not so, however; since, on comparing notes with various apiarian friends, I find I have cause to congratulate myself on the reasonable amount of success which I have met with. I can, indeed, speak of previous disappointments, for never before in all my experience as a bee-keeper did a month of May leave me so rich in well-stored and well-peopled stock as last May, or so hopeful of the coming honey-harvest. My six colonies on the 1st of June occupied and well filled eighteen boxes and glasses between them, in several of which they had constructed a large quantity of comb which appeared fairly stored with honey. This honey being collected chiefly, I imagine, from the apple blossoms, which were magnificently abundant in our orchards. June, however, with its almost incessant rains completely changed the state of affairs, and left some of my stocks so pauperised that

I was fain to feed them, when July happily brought with it a fortnight of fine weather of which my bees made the most. A considerable quantity of honey was again collected, of which I plundered 29lbs. nett from three hives, the others not being sufficiently well off to justify me in taking anything from them. Even this was more than my fair share, as I have had to feed two of these stocks largely and am doing so still.

In a recent volume of THE COTTAGE GARDENER I explained the relative position of these six colonies in my bee-house. They still occupy their relative positions, the only change being that the left-hand stock on the lower shelf threw off a natural swarm (which I had encouraged it to do) on the 15th of June, so that here a new queen takes the place of the old one. The other stocks, so far as I know, are under the same government as before. The swarm was put into a "Tasmanian" hive, but the bees all died of starvation, I fear, about Christmas. I rather suspect the queen must have perished (probably of old age) some time before, as this swarm never did much, and took the food with which I supplied them reluctantly, nor could I find her among the dead. One of my original six is also weak in population, owing to my neglect in feeding them sufficiently early in autumn, in consequence of which many of the bees perished. They are active still, but evidently weak in numbers. All the rest are in good condition; but owing to the lateness of the season I have seen pollen carried into one hive only as yet, and that not before the 18th inst. (February). Three of my queens must be old, and ought to be destroyed this summer.—B. & W.

OUR LETTER BOX.

COCHINS EXCESSIVELY FAT (*Fat Cochins*).—You feed them too nourishingly; and although you do not mention their diet, we at once recommend you to give them chiefly boiled potatoes, with a very little barley meal mixed with it. Do not give them satisfying meals even of that, and let them have a good run and plenty of green food. The killed pullet being internally fat "to an intense degree" tells that strong measures are needed to save the others.

EGG-HARVEST.—*Deodar* says, "Perhaps 'AMATEUR' (at page 325), would inform us what sort of hens his are, how many cocks he keeps, and what sort of place they are kept in, &c."

COMB OF THE WHITE DORKING (*W. H. Heywood*).—We believe we are quite justified in asserting that all combs are correct for Dorking fowls. Our best judges are of that opinion. The poultry world has its fancies nevertheless. The single is preferred in Grey, the double in White, and the cup is disliked in all. In our opinion the comb is quite a secondary point, and if we got large size, square shape, clean legs, good claws, and good carriage, we should care little for comb or colour. You must advertise for an exchange.

HENS EATING THEIR EGGS, AND LAYING AWAY (*Cock-a-doodle-doo*).—First, as it is believed hens eat their eggs to form the shells of others they intend to lay, and as it is fair to believe they would not do so if they had the material at hand, we advise you to supply them with bricklayer's rubbish scattered or thrown in heaps about their haunts. Find out their laying-places, and put some hard sham eggs in their nests. Let two or three lie about, they will get tired of pecking at them, and they are so like, that even the cook may be deceived. Provided it is on our own premises, we care little where our hens lay; but we confine them if they lay for the benefit of our neighbours. Hens are not the only things that will have their own way, and they will.

BATH AND WEST OF ENGLAND POULTRY SHOW (*J. H. S.*).—The highest prizes are £4. The entries close May 1st.

DUCKS (*C. S. J.*).—The Aylesbury are larger than the Rouen, the former are white, the latter are exactly like the Wild Duck. The Muscovy is larger than either, but its flesh is coarse and ill-flavoured.

NEW DEPRIVING-HIVE (*A. M. V.*).—The same objection was raised by "A DEVONSHIRE VICAR," in our present volume, and considered by us at some length at the time.

MOULDY COMBS (*A Constant Subscriber, Burstall*).—The recent long-continued wet weather is, without doubt, the cause of mouldy combs in nearly every hive. If the colony is a strong one, the bees themselves will remedy the evil. A clean and dry floor-board will be a great assistance, but all interference beyond this had better be avoided.

LONDON MARKETS.—MARCH 4.

POULTRY.

There is still a supply much below the average and a small trade. Prices are maintained.

| | Each—s. d. | s. d. | | Each—s. d. | s. d. |
|---------------------|------------|--------|--------------------|------------|--------|
| Cock Turkeys | 0 0 | to 0 0 | Pheasants | 4 0 | to 4 6 |
| Hen do | 0 0 | " 0 0 | Guinea Fowls | 3 0 | " 3 0 |
| Large Fowls | 6 0 | " 6 6 | Grouse | 0 0 | " 0 0 |
| Smaller Fowls | 4 6 | " 5 0 | Pigeons | 1 2 | " 1 3 |
| Chickens | 3 6 | " 4 0 | Hares | 3 0 | " 3 3 |
| Goslings | 7 6 | " 8 0 | Rabbits | 1 4 | " 1 5 |
| Ducklings | 4 6 | " 5 0 | Wild ditto | 0 8 | " 0 9 |

WEEKLY CALENDAR.

| Day of Mnth | Day of Week. | MARCH 12—18, 1861. | WEATHER NEAR LONDON IN 1860. | | | | Sun Rises. | | Sun Sets. | | Moon Rises and Sets | Moon's Age. | Clock before Sun. | Day of Year. |
|-------------|--------------|---------------------|------------------------------|-----------|-------|-----------------|------------|---------|-----------|--|---------------------|-------------|-------------------|--------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | | | |
| 12 | Tu | Kerria japonica. | 29.490—29.393 | deg. deg. | | | m. h. | m. h. | m. h. | | | | m. s. | |
| 13 | W | Snowy Mespilus. | 29.528—29.462 | 45—39 | S.W. | ·12 | 23 af 6 | 57 af 6 | 24 a 7 | | 1 | | 9 54 | 71 |
| 14 | Th | Daphnes. | 29.510—29.398 | 47—31 | N.W. | — | 20 6 | 59 5 | 32 8 | | 2 | | 9 37 | 72 |
| 15 | F | Magnolia conspicua. | 29.823—29.756 | 47—25 | W. | — | 18 6 | vi | 41 9 | | 3 | | 9 21 | 73 |
| 16 | S | Anemones. | 30·010—29.932 | 49—35 | N.W. | ·03 | 16 6 | 2 6 | 50 10 | | 4 | | 9 3 | 74 |
| 17 | SUN | 5 SUNDAY IN LENT. | 30·044—29.995 | 55—38 | N.W. | ·19 | 14 6 | 4 6 | 57 11 | | 5 | | 8 46 | 75 |
| 18 | M | Adonis vernalis. | 29.972—29.962 | 56—45 | W. | — | 11 6 | 6 6 | morn. | | 6 | | 8 29 | 76 |
| | | | | 55—33 | W. | ·01 | 9 6 | 7 6 | 2 1 | | 7 | | 8 11 | 77 |

METEOROLOGY OF THE WEEK:—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 50.7° and 33.5° respectively. The greatest heat, 67°, occurred on the 12th, in 1841; and the lowest cold, 13°, on the 13th in 1845. During the period 139 days were fine, and on 99 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

Asparagus, top dress the beds with light, decomposed manure, and fork them lightly over, taking care not to injure the crowns. The beds intended for new plantations to be frequently turned, to be in readiness for planting the young roots as soon as they have started into active growth. *Beans (Broad)*, plant Early Mazagans, as most of the November sowings have been destroyed except where they were well protected. *Beet*, sow in drills a foot apart. *Broccoli*, sow seed of the Early Cape, Grange's, Walcheren, &c., in a frame, to bring on early, and some in open, rich ground. *Cauliflowers*, plant out under hand-glasses. Prick out seedlings in frames when they are large enough. Sow seed in a gentle heat. Do not let those under hand-glasses, or in frames, or the young seedling plants that may be pricked out, suffer from exposure to the cold north-east wind, so prevalent at this season of the year. *Cabbage*, sow, and the plants that have survived the winter to be planted out. *Capsicums*, sow on a hotbed. *Carrots*, sow for principal crop. Dig the ground deep, break it up well, and let it be the lightest in the place. *Leeks*, the same as advised for Onions. *Onions*, sow the general crop on rich ground in an open situation, either in rows 9 inches or 1 foot apart, or in beds, as in the market gardens, from 3 feet to 3 feet 6 inches wide, and foot-alleys between for the convenience of weeding. *Peas*, sow in warm situations, and earth up any that may have survived the winter. The transplanting of those that have been forwarded in pots to be proceeded with as fast as they are hardened by gradual exposure. *Parsnips*, sow as advised for Carrots. *Potatoes*, plant for a principal early crop while the ground continues in good working order.

FLOWER GARDEN.

Carnations to be potted into the blooming-pots; give them a gentle watering, and place the pots upon slates or boards in an open airy situation; plant out the remainder into beds or borders. Beds of *Ranunculuses*, *Anemones*, and bulbs of all sorts, should be planted. The late severe winter has caused many vacancies on rockwork which should now be filled up. The various species of *Alyssum*, *Arabis*, *Aubretia*, *Astragalus*, *Saxifraga*, *Draba*, *Sedum*, and *Iberis* are suitable for rockwork, as also the dwarf species of *Campanula*, *Dianthus*, *Veronica*, *Saponaria*, dwarf *Phloxes*, &c.

FRUIT GARDEN.

Prepare to protect the blossoms of wall trees. Commence grafting as soon as the bark separates freely from the wood.

STOVE.

Finish the shifting of all specimen plants as quickly as possible, and keep a sharp look out for insects. Keep up a brisk-growing moist temperature—say from 65° to 75° by day and from 55° to 60° by night, and to shut up early.

GREENHOUSE AND CONSERVATORY.

Continue to shift the greenhouse plants as you see they want it, and if the plants are well rooted and in good health do not be afraid of giving them a liberal shift; place the plants by themselves after they are shifted, and keep that part of the house rather moist and close for a time until they begin to take root; after which they may be freely exposed. Damp the house twice or thrice on clear days by sprinkling the floor, and a slight syringing on clear mornings about twice or thrice a-week will be of service.

FORCING-PIT.

Continue to remove the plants as soon as the flower-buds begin to expand. Stop the barren shoots of *Roses*. Take care that no plant suffers for want of water. Increase atmospheric moisture by syringing on most afternoons.

PITS AND FRAMES.

Keep up a nice growing heat in the cutting-frame. If the linings are getting cold turn them to the bottom, and add some well-fermented dung. Continue to put in cuttings of the plants previously and lately recommended. Sow tender and half-hardy annuals. Pot off *Dahlias* as they are struck. Shade from sun *Auriculas* in frames, and give air; but exclude rain and frost. Thin out the pips when they are too close, to give increased size and strength to the remainder of the truss. Prick out into pans or boxes the successional sowing of half-hardy annuals. Young seedling plants of all sorts, as soon as they can be well handled, to be pricked out into pots or pans an inch apart, to accelerate their growth.

W. KEANE.

DOINGS OF THE LAST WEEK.

DIGGING when the weather would permit, having long found that digging or trenching heavy land when wet is worse than labour thrown away. With the exception of Peas and Beans nothing has been sown in our heavy soil. There is no greater error than sowing seeds when the ground is in a wet, clammy state. Most small seeds get so coated as to rot from being unable to get access to air. If the soil is nice and dry and pulverised, this never happens. Future rains pass through the soil freely without filling up the air-vents; but soil when wet and clammy, when sown or planted, if of a stiff nature, can scarcely be made open and porous for that season; the fork or hoe seem to have lost their power over it. In all such cases deferring operations until the ground is in good order will be true economy as respects time. In such cases where the seeds must be got in, it is of importance to have a little dry material to cover them with. A charred heap of all kinds of rubbish is useful for this purpose.

A row of bush pyramidal Pear trees that used to bear immensely show few blossom-buds this season, partly owing to the heavy crops, the dull weather of last summer, and chiefly to not being disturbed about the roots for several years. The ground was, therefore, dug about them, a good opening kept, and all the roots going straight down either cut or raised. I was surprised at the size some of these straight-down roots had attained in a few years. A little fresh soil was battered round

the cut and horizontal roots. What has been done will not affect the fruit of this year, what little there will be of it, but will so curtail growth, that I expect a mass of fruit-buds for 1862. When finished we shall mulch the trees with a little dung, to enrich the fibres left and encourage surface-rooting. The trees are rather large for lifting altogether, though if that could have been done in October it might have been quite as well.

Pruned part of the Peach trees out of doors, intending to cover them with glass if possible; thinned out the young shoots in the Peach-house, preferring to do that gently and by degrees. Supplied the evaporating-pans with soot and other manure water to give off slight ammoniacal fumes in the house. Moved some of the boxes of Peas that were sown the other week out under the protection of a cold pit, the Beans not yet being forward enough. Watered Potatoes in pots, and Potatoes and Radishes in beds. The boxes of Peas will stand a few days between the Potatoes in the last bed, planted out in the earth-pit. Put some more Asparagus into a frame over a dung-bed. Gathered from and gave a thinning to old Kidney Bean plants, and used manure water to those in pots coming into bloom and swelling. Changed the manure water for Strawberries swelling nearly every time they were watered. Planted out the Cucumbers in the bed that had the addition of more leaves and dung added to it, two nice plants in a light. Planted also five lights in a pit heated by hot water, using two strong plants in a light, the roots being confined to about 2 feet in width and 1 foot in depth. These have not been stopped, it being intended to allow the main stem to grow from 3 feet to 4 feet before stopping, trained to a trellis 14 inches from the glass; but side-shoots are coming now, and these will be stopped at the first joint to produce short-bearing *s'roots*. Melon plants shifted into larger pots, as no room can be spared for them as yet. Temperature for Cucumbers from 60° to 65° at night, and from 65° to 70° during the day; but in bright sunshine from 70° to 85°, and no shading. Plants in frame stopped to cause runners to cover the ground.

The weather being comparatively dull, cuttings have required no shading to speak of; the little sun has just been enough to give them a little hardness and strength, and scarcely a cutting of any kind has failed. There is now hardly a thing to make a cutting of among bedding plants. An ardent amateur wrote to say, he would send a man for a good basket of cuttings, as he had got a bed all ready, and wanted to know when would be the most suitable time, and I was obliged to answer July or August. A basket of cuttings just now, when every foot of glass must tell, is worth pretty well their weight in gold. Vines in pits tied up to give them all the room, and other things taken out, as the shade is getting too thick. Vines in house tied out, a few bent where not breaking equally. Fuchsias below them, growing nicely after being shifted, and getting a skiff from the syringe in a sunny day, which suits better than giving too much at the roots. These in a week or two, as the Vine foliage gets dense, will be moved to the next house when the buds are moving, and which is now supplied with Scarlet Geraniums, &c., the Pelargoniums, chiefly of the florist kinds, being moved into the late vinery, where they will be kept cooler and have abundance of air. They might have stayed a week or two longer, but for the syringing of the Vines, the clay and sulphur from which might disfigure their foliage; as the syringing of the Vines is most useful in a sunny day, the drops of water that might light on the Pelargoniums would be as so many burning-glasses in producing spot and other evils. The greatest security against this annoyance is to have all the foliage dry before the sun touches it. Scarlets do not mind it a bit. Gave plenty of cool water to Cinerarias, Calceolarias, &c.; and tepid water to Azaleas, &c., coming into bloom. Getting very crowded, commenced preparations for transplanting to preparatory-beds, to be protected, Calceolarias and Scarlet Geraniums.—R. F.

PROTECTING SEEDLINGS FROM SLUGS.

VITALITY OF KITCHEN-GARDEN SEEDS.

AMONGST the various substances used for keeping slugs and snails off patches of annuals and seed-beds I have never seen mentioned the awns of Barley, which may be had in any quantity when the grain is threshed and dressed. No snail or slug will crawl over ground where these awns or beards have been scattered. They contain nothing injurious to the most delicate germinating-point, and are not washed away by heavy rain like soot and lime.

Turning over the contents of some drawers lately I found sundry packets of vegetable seeds, the surplus remaining after last year's sowings. It occurred to me that a table would be very useful, showing how long each sort of the most generally cultivated kitchen-garden seeds retains its vitality, so as to be available for use after seasons like the past one, when hardly any crop arrived at full vigorous maturity.—A DIBBLE.

[Such tables have been frequently published, and numerous notes on the subject appeared not long since in one of our papers on the "Science of Gardening." The question to be solved is not how old a seed must be before it ceases to be able to germinate, but to produce a productive plant. We shall always readily publish information on the subject; and it would be well if those who have leisure would sow separately an equal number of seeds of different ages of any kitchen-garden plant, cultivate the plants exactly alike, and report which are most productive.—EDS. C. G.]

BEDDING PLANTS.

WALTONIAN CASE—MAGNOLIA FUSCATA—GEOTHERMAL CULTURE—POTTING SEEDLINGS AND CUTTINGS.

ONE of my friends again lost almost all his plants of *Tropæolum elegans* this winter, after having a large stock of early-struck plants last autumn. Some he kept in a conservatory, some in a common greenhouse; and some in a cold frame, and all on trial, and he tells me all are "as bad as ever." But I went to see the Waltonian Case at work with Mr. Walton himself, the inventor of it; and he had lots upon lots of *Tropæolum elegans*, all as safe as the hardiest natives, on a shelf across the coldest end of his greenhouse over the doorway, and quite close to the glass end of the house, where they stood all the winter, I believe. They were all singly in 60-sized pots, in light rich stuff, and looking remarkably well. Although they call it a greenhouse, this house is used and is managed like a conservatory almost all the year round, and is now in full bloom with Azaleas, Citisuses, Cyclamens, Cinerarias, and other spring flowers and forced bulbs.

The *Nemophila insignis* they do remarkably well. Every spring I see lots of it as hanging plants on one of the front high shelves; and on a shelf on the back wall in the centre of the house, and just over the Waltonian Case, stood pots of the trailing *Cyanotis repanda*, otherwise called *Tradescantia zebrina*, looking very well.

Now, these are two good index plants for an old gardener like me to tell how that house was treated and aired all this trying winter—the *Nemophila* on the front shelf just under the slope of the roof, and the *Cyanotis* up high on the back wall. The former a very hardy, and a very succulent trailing annual, and very easy to kill in our climate with too much of anything—too much heat, too much cold, too much wet, or too much dryness, and, above all, by too much philosophy, self-conceit, or carelessness; the other, the repand or ribbon-marked-leaved *Cyanotis*, *alias* *Tradescantia*, is a plant that needs more heat than a greenhouse all the winter, much less water than most plants of like substance in "sic a place," and a most enduring customer to ill luck or usage, but the very handle of an index to the tell-tales of well or woe for the last four months. The ribbon-bands on the leaves change their hue on the least change from better to worse, or from good to better and best, and keep the change for months.

Well, the secret of the keeping of the *Tropæolum elegans* in winter is not yet in the hands or heads of half of those who use it in summer; but here it is—a dry roomy house, kept at nearly a conservatory heat all the winter—that is, at 45° maximum, and 40° minimum, or as near the two as may be done, and as much air at all times as the state of the weather permits, and the elegans not subject to draught, for where they stood no draught could touch them. To be under these conditions, and to be in very small pots, and kept half dry just like

Mignonette, seem to be the essential points for amateurs to adhere to for success with this the finest of our bedding plants. The Waltonian Case stood against the back wall breast high, or not quite so much—that might be 12 feet or 15 feet from the glass in front, and 7 feet or 8 feet from the slope of the roof. At that distance from the glass most gardeners dispense with shading over their cuttings so early in the season; but the Waltonian was shaded there from ten till four every fine day, and it was a great deal drier-looking than some gardeners would like to see their cutting-frame. Yet all the cuttings (and it was quite full), looked as clean and healthy as any I ever saw. The cutting-pots stood on an inch depth of white sand. The thermometer was at 80° at 2 P.M. on the 2nd of March. The house was abundantly aired, and no one was near it for hours previously. They do not seem to find the smallest trouble in managing the Case, or in turning out enormous numbers of cuttings from such a small space. The house in which it stands is down the garden a long way from the dwelling-house, so that ladies cannot run in and out of it as if it were attached to the living-rooms, to look at every turn of the glass, and do or undo shading, or giving air at every turn or run of a cloud across the sun as some people do; and it is my firm belief that it is by too much care, and too much precision, and attending to positive rules, instead of a give-and-take principle, that those who cannot manage Waltonians must act, and not on the evidence of their own senses, nor according to the turns of the weather. I passed the front door or back door of this garden twice every week for the last seven years, on my way to the Experimental, and sometimes six times a-week, and I never saw a fuss made, or a running to see that all was right with the Waltonian the whole time. But such things are often very unpleasant scenes in the framing grounds of great people in the country.

The winter of 1859-60 did not hurt the self-sown seeds of the bedding Geraniums. I think I told of a lot of the seedlings being potted last May or June; at any rate, the plants look fine now in a range of cold pits. This is the great Rose garden of Surbiton, and every good new Rose is bought as soon as it is out. All kinds of stocks are used, and every bud of a new Rose is worked more like as for a nursery; but to this day I believe it is not quite decided who is the better budder of the two, Mrs. or Mr. Walton. Some of the Roses had a severe pinching this winter, but hardly any were killed, except two or three small plants of Tea Roses, and one or two large plants of the same as Madame Willermoz, and one of Adam. All the tender Noisettes on the walls are safe, and every walk and alley in the kitchen garden is lined with all the choicest Roses very much exposed; but the soil is light, and they are constantly planting and transplanting Roses, selecting sorts, casting out second and third-rate kinds as soon as they are proved to be such, or when better sorts claim precedence. All this added to what we have heard and read of, go to the very root of the evil, and to the very fibres of the secret of growing choice Roses in our climate. Up with every individual plant of them early in November, as long as you live; and if you can spare it leave something in your will to pay for transplanting them for so many years after you are dead and gone. But begin at the end of September, and transplant all the young of all the plants which you will hear of as having suffered this last winter from frost—not one year or two seasons, but every year for ever, as is recommended for fruit trees on the miniature orchard system. Now I think of it, let me suggest a clause next autumn in the prospective week's work by Mr. Keane, and in the retrospect of the last week's doings of Mr. Fish, who has already put his seal, incidentally, to this clause in our bill of works.

MAGNOLIA FUSCATA.—Concerning this plant, which is mentioned by W. Earley, at page 335, as a fine thing

to cover the back wall of a greenhouse, I well remember an instance of "the breeze wafting a delightful fragrance" from it, and from the conservatory up on the mount at Claremont, not far from Surbiton; that was in May, 1831, when Mr. McIntosh took me to see round the place—say just thirty years since come next May. The plant was then in bloom, and of considerable size, and scented the air a long way from the house. The same plant is there now, and looks as fresh as any plant in Surrey. It blooms, and has bloomed every year since, and is never affected by insects of any kind; and I consider it now as the best plant for the back wall of a greenhouse or conservatory of all that we have yet recommended for such a place, and no one need say it does not live long enough.

Speaking of Claremont reminds me that the best border in England, in 1831, on the geothermal style of cultivation, was to be seen there; for I had that season seen the best and principal gardens in the country. And from that day to this the same border is and has been heated in this geothermal manner; but the heating of the soil is not as M. Naudin, of Paris, and some of my friends at home would have it—not by heating the bed from the bottom to keep the frost from the top!—but sideways, from the front wall of the hothouse the year round, the border being considerably higher outside than the source of heat inside the range of houses. Eight or nine years back I reported in THE COTTAGE GARDENER a hedge of the different varieties of *Thunbergia alata*, the Black-eyed-Susan plant, as growing on that border after the manner of Sweet Peas, and the seeds were ripening just as freely that way as Sweet Peas themselves; but, then, the geothermal, or bottom heat, of from 70° to 80° at the troots throughout the summer was the whole secret of the thing; and I sincerely hope that the intellectual blunders of earnest men respecting our means and the ways of applying them will not cast a slur on one of the greatest improvements to which a branch of gardening is still open amongst us—that is, the summer supply of bottom heat in the open air, even if only indulged in as far as Captain Trevor Clarke has often done in Northamptonshire and recorded.

The great English hybridiser has been in the habit for years of making substantial hotbeds in the open air early in the summer, and planting out his spare plants from the stove and greenhouse. His Cannas were noted for years as most splendid that way. But Cannas and *Hedychiums* were so heated by Mr. McIntosh on the geothermal border at Claremont thirty years back, and many more plants of like kinds; but for the last twenty-five years, or since Mr. Mallison succeeded to the place, and since the Princess Victoria resided there and took a fancy to the plant, the geothermal border has chiefly been devoted to the growth of one of the finest bulbs of the creation—the *Belladonna Lily*, which is still a great favourite with Her Majesty, who receives great bouquets of it every autumn from Claremont, wherever the Court is residing. Perhaps Her Majesty may induce the Prince Consort to tell them all this at Kensington Gore, if, indeed, Mr. Eyles has forgotten the extent of geothermal culture he showed to me in the autumn of 1840 up at Chatsworth.

But I must back to Claremont to say that I believe there is nothing to be seen in any part of Europe in its way so really and so regally splendid as the hundreds upon hundreds of that *Belladonna Lily* on the geothermal border aforesaid when they are all in bloom, as I often see them; and I cannot conceive the depth of the indifference which seems to hang on the British mind with respect to the most lovely and most enchantingly beautiful portion of the flower world, the production of bulbous "roots," all as hardy, or very nearly so, as that *Belladonna*. But let us revive the geothermal spirit once more on a sound bottom, and shun the creed of the revivalist himself, and never once attempt to heat the value of a hand-light space of soil from the bottom

of the borders, as he and his innocent allies among ourselves would have us do. And, believe me, if but one place in a parish, or a corner of county, would take it up in earnest, the whole country would soon be in for it deep as in ribbon-borders, and no wonder; for any one who had seen *Calochortus splendens* and *venustus* in 1829 and 1830, just before they disappeared from our gardens for lack of knowledge of their ways, and the hosts of equally beautiful things which were in fashion at that time, and for the twenty years preceding that period—I say no one who had seen such sights, and would know how to command them now, could resist the force of temptation which geothermal cultivation would place within his own garden.

But, now that pot room and pots are among the luxuries of almost all gardeners, be they on their own hooks or cooking for others, it is just the time you see and feel the necessity of turning one of our best rules upside down.

Never pot a seedling of a bedding plant in March in a single pot; always put four or six seedlings round the sides of one pot as the smallest number, and the number of the pot must be 48, even if you want forty thousand of them. Then, instead of six little 60-pots, you have one to water, and find room for, and in six days it will not require more water than the six small ones would need six times. Just think of that!

In nineteen times out of twenty, and for nineteen kinds of plants out of twenty, cuttings from a cutting-pot do better by being put, like seedlings, into 48-sized pots, and so many in a pot. When a cutting-pot is once well-rooted, as the phrase goes, it should not stand idle another day, but be shaken out at once, and the cuttings dealt with on the makeshift principle, and be held as close and nearly as warm as they were in the cutting-bed for the next two, or three, or more days, according to the weather. The reason is, that not a single day is to be lost during the propagating season in such a season as this, when so much is to be done for what the winter has undone. If you happen not to need to be in the express, the cuttings will take no harm in the cutting-pots for a whole week or ten days after they are rooted, if you bring them out of the bed and put them in a place a little cooler, but not just as cold as a cold frame, which must have a large portion of air from this time onwards. A hand-light in the end of a cold pit is the next lowest shift on my scale, as the hand-glass will be close; and the light of the cold pit, or two of them, nearest to where the hand-glasses are in, need not be tilted for some days; and a newspaper over the hand-glasses inside a cold pit is a ten times better way of shading cuttings just struck than a mat or canvass over the lights of the pit—and the reason is this: If you put a mat on the outside glass you make the inside colder than is lawful for a cold pit under the shiftmaking principle; while at the same time your cutting-pots under the hand-glass want all the extra heat a cold pit can have from March sun. The newspaper is a light covering, and keeps the cuttings from the direct rays of the sun, while it allows the glass of the frame to heat the air of the pit round and round the hand-lights.

The next upward rise is this:—A three-light box, or one of one or two lights only, quite empty, and placed over some dry and sifted coal ashes. Two or three hand-glasses inside such a frame would keep a great number of cutting-pots, and the rest with older cuttings just newly potted; the hand-glasses to be shaded with paper, and the newly-potted with a mat or piece of tiffany on the outside glass. The next step warms my heart to think of it. It is a temporary hotbed, made of odds and ends from leaves and stable-litter. From ten days to three weeks in a temporary bed of this kind, and plunged in it, would set all the bedding plants on their legs in any one stage of their lives. The old, hard, horny bottom of a favourite scarlet Geranium, just fresh potted and thus plunged, would soon bud and blossom like a Nosegay; and the tiniest seedling of a speciosa Lobelia

would as soon raise its ears with that luxury. Cutting of all sorts and sizes just the same. All of them would soon tell of the magic influence of a temporary hotbed at this season of the year. Then lead on in imagination to planting-out time, and think of the influence of this our old favourite, and temperate bottom heat, now most beautifully termed geothermal, and see what it would do for the newly-planted—the roots as warm as they were last March in that temporary and temperate hotbed, and the tops as free as the air we breathe, and all that without ceasing the whole season. Enough to make a fellow young again! And to have such a pretty name as “geothermal cultivation” is well worthy of the light-hearted man who gave it, and who, if he had been free from the schools of Drumliedock, would have made the best gardener in France, and the best possible author for naming all our garden fancies. D. BEATON.

LILIES IN POTS FOR A CONSERVATORY, AND FUCHSIAS FOR ITS RAFTERS.

I AM desirous of having some Lilies in a cold conservatory or orchard-house. Will you tell me if the under-mentioned bulbs will do? I want three bulbs in a pot. What size should the pots be? I require thirty-eight pots, nineteen on each side. I propose placing them in pairs—that is, two *Liliums* of the same kind opposite each other, and so on throughout the house on each side of the walk. I propose having two pots each of *L. atro-sanguineum*, *L. lancifolium* (white), ditto (spotted), ditto (red), *L. longiflorum*, *L. eximium*, *L. giganteum*, and four pots each of *Tuberoses*; large plants of *Scarlet Geraniums*, *Fuchsias*, and *Gladioluses*. I shall have eight rafters for climbers. I intend having *Clematises*, *Passifloras*, and *Fuchsias*. In the autumn I intend putting *Chrysanthemums* in the place of the *Liliums*, &c. Do you think this is practicable, and that it will give me a fair show of colour with the least trouble, being obliged to manage it all myself. I want a few gay flowers free from blight or inclination to get it. What *Fuchsias* should I have for the rafters?—KATE.

[What are called 16's or 12's, or pots of 9 inches or 10½ inches, will suit best, and two parts loam, one part leaf mould, and one part heath soil, with a little silver sand, will grow the bulbs well. If you get good strong bulbs you will have a pretty show, and following with *Chrysanthemums* will answer well, only the Lilies will not last all the summer. The best column *Fuchsias* to alternate with *Clematises*, &c., are the small *macrophylla*, *gracilis*, *Thompsoniana*, *coralina*, and *globosa*.]

TOMATOES FROM CUTTINGS.

THE cuttings to be taken from the tops of the bearing shoots (say in September, the same as bedding plants), and planted in five-inch pots filled with sandy loam. They should then be watered and placed in the shade. The cuttings form roots and are ready to pot off in a fortnight or three weeks. On the approach of frost they should be stored away with other plants intended to be kept over winter, in a pit kept moderately moist and free from frost. Plants raised from cuttings are less succulent, and, therefore, do not so readily damp off, or suffer from the cold, to which they are liable to be exposed after being planted out; and come into bearing sooner.—JAMES CRAIG, Rochester, N.Y.—(*Genesee Farmer*.)

THE FLORAL MAGAZINE.

THE “Floral Magazine,” which has now reached its eleventh number, has improved much. The present issue contains four very beautiful illustrations—viz., some of the incurved *Everlastings*; two of Mr. Salter's new large-flowered *Chrysanthemums*, which we can speak of as being really great beauties—Little Harry especially being quite a model for its habit of growth and beauty; a purple standard *Lobelia*, which introduces a new colour into a very showy tribe of perennials; and a gorgeous drawing of *Comte de Falloux Rose*, a most faithful and artistic portrait of a charming introduction of Mr. Standish's, of Bagshot. We have seen it in flower, and can bear witness to its being what our neighbours call “*tres florifere*.” We cannot, however, agree with Mr. Moore in thinking it resembles *Géant*

des Batailles, being to our mind quite different. It has very much of the China habit, and the style of its flowers is also very much of that character, and as a *pot* plant it will be greatly prized. The letterpress, as usual, is clear and sensible, as one might expect from Mr. Moore. Might we suggest to Mr. Fitch, whether in an artistic point of view it might not be better not to make the outline quite so heavy?—*e.g.*, in the plate of *Chrysanthemums*, it takes away from the light and airy nature of the petals. We think the present an excellent number, and worthy of the reputation Mr. Reeve has acquired for his scientific publications.

[N.B.—By-the-by, talking of Roses, in our remarks on Mr. Rivers' book we gave an impression that the misnomer of "Verder" for "Verdier" was Mr. Rivers'. We had no intention of doing so, for we were well aware Mr. Rivers knew Verdier too well. It should have been laid to the printer.]

TREATMENT OF PLANTS WINTERED IN A CONSERVATORY.

SOLANUM CAPSICASTRUM—TEA-SCENTED ROSES.

My garden appliances are a small conservatory forming an entrance to my house (about 25 feet long by 8 feet); a smaller stove for forcing, both heated by hot water; and a common garden-frame.

I have succeeded in saving a considerable number of pots of autumn-struck cuttings of *bedding plants*, and old plants of *Scarlet Geraniums*, though somewhat at a sacrifice of neatness in the conservatory, and I want to get it cleared of them as early as possible. I have repotted them in separate pots, put them into the stove for a few days to establish them, and now want to know how soon I may trust them in the *frame* without heat, or further protection than a mat?

Solanum capsicastrum and *Heaths* done flowering.—How are these now to be treated? Am I to cut both back and repot them? and should the former be put into the frame to harden, or the stove to make wood and flower, and set fruit for next winter?

Tea-scented Roses on their own roots.—When I returned home last summer, after being absent for some weeks, I found these mildewed (possibly in consequence of first being under-watered and then over-watered). I cut them back and repotted them in autumn. They started well in January, but the mildew has again appeared. After trying sulphur, Gishurst, and tepid-water syringing ineffectually, I shook off all the soil, although many had buds, and repotted in smaller pots, as the old pots were not full of roots, giving good drainage, and soil composed of very fibry peat, loam, and old rotten manure, with a little sand; but the mildew still shows a tendency to return. Did I do right, and what else can I do? My conservatory is very dry, so that I can syringe over-head all winter, and it has plenty of air and light. I have, therefore, little or no damping off at any time, and my *Pelargoniums* are most healthy.—AN AMATEUR.

[With no more help than coverings of mats, all the bedding plants in England, in Ireland, and in Scotland, or Scottish islands, that are established in their pots like your plants, may be safely trusted to cold frames from the first days of March in any year. Out with yours at once into the frame, clear their litter away, and have nothing but your best plants and all your flowers in the conservatory for the rest of the season. Give abundance of air to the frame whenever the weather is fine, but never trust in the spring to the softest south-west wind at night, but so act as if you were certain every night you went to bed there would be a change and a frost before morning, and you will never rue it.

Solanum capsicastrum should now be pruned back as close as they do White and Red Currants, and then be turned in the pots as it is into the stove; and when the young growth is fairly forced into activity shake the soil all from the roots, pot afresh in rich, loamy compost, and return it into the stove and keep it till the end of May; then in the greenhouse for a month, and out in the open border from then to the 10th of September; then up and pot with a ball; shade, and shelter till a fit object for your front entrance conservatory for the winter, and so on for the next fifteen years, or longer. But Mr. Beaton, who has no stove or hotbed, or anything more than a cold frame and a hand-glass, keeps his *capsicastrums* as they are to the very end of May, and will not prune them at all for the next three or four years, but plant them out every year as they are, just after

all the Dahlias are out, and take them up, just like you in September, and do as you are going to do after that.

You have done the Tea Roses full justice under such untoward circumstances, and now in a few more weeks you will see no more of the mildew—they will grow out of it, but let it not get the advantage over them; in the meantime, dusting flowers of sulphur over them will keep the mildew down most certainly.]

KIDDEAN SYSTEM OF HEATING.

IN THE COTTAGE GARDENER of the 29th January last, Mr. Beaton gave a description of this system of heating. I was so much pleased with it, that I immediately had it constructed in my greenhouse, and on the 1st day of February I had it in full operation, and am now happy to bear testimony to its being all that Mr. Beaton seems to anticipate.

With a small fire for two or three hours in the day my greenhouse is sufficiently heated, with a bottom heat in my pit over the hot-air chamber of from 75° to 80°. Several practical gardeners have seen and admired it. Several dairymen have examined it, and most are of opinion that it is the best system yet discovered for heating cheese-rooms. Some have adopted it, and when sufficiently tested I shall communicate the result.

Your correspondent "ELIZA" must not have had her hot-air chamber properly constructed, as she says "by trying lighted tobacco paper at the cold-air opening the smoke is as often driven out as in." My openings, one on each side of the furnace near the bottom, the size of half a brick, draw in the smoke from such a taper with considerable force.

I have not adopted the opening from the ash-pit into the hot-air chamber, as I could see no advantage from it, but rather apprehend a disadvantage. I am of opinion it saves much fuel, and, on the whole, is the best system of heating yet discovered. Many thanks to Mr. Kidd.

I have a house 60 feet long, 8 feet wide, front and roof of glass, 5 feet high in front, and 9 feet at back. Would Mr. Kidd or Mr. Beaton be so kind as to say if a furnace and hot-air chamber (erected inside in the centre), would heat it sufficiently to fruit Vines in pots? Situation the south of Scotland, only a few feet above the sea level and close to it.—AMATEUR.

[We are much obliged by the above communication. Our greatest desire is to hear from men of practice all that they can say or do for the Kiddean system, and everything they can think of and suggest against it. We are persuaded ourselves that it is cheaper by 75 per cent. than any other method now in use. But we are equally certain that it is a dangerous mode in the hands of people who have little practical understanding, because they will not always see the necessity of supplying the hot parched air with sufficient moisture to render it good for plants. You will have seen that the ash-pit ventilator was not Mr. Kidd's way, but a lucky mistake.

Tell the dairymen this is the best hit yet made to dry their cablocks. Tell the fishers to try it on their nets, lines, and canvass. Tell the people in the laundry this is "how to do it," at 80 per cent. cheaper than it is now done, in London, for the million, in the washhouses and dryhouses for the poor. And you may tell that the morning dew in summer is not more refreshing to fruits and flowers than this system may be rendered. We would not advise to have it set up inside any place, and certainly not in the house you mention. Did you try sawdust to keep on the heat after the furnace was at the right pitch? We have just heard of a man who is now using sawdust night and day for weeks last past, without an ounce of coals save on the first day, and his chamber is 130° the whole time, and he forces with it; but what, or his way of moistening, we could not learn.—D. B.]

HOUSE SEWAGE.

I HAVE just completed the construction of three tanks for liquid manure, one for the stable, &c., one for the house slops from the sink, and another is formed by a division made (as a filter), in the well of the privy. The two latter tanks will communicate, and the last-mentioned one adjoins a wash-house in the garden, where I propose having all the washing for my large family carried on. I have, therefore, had a communication made between the two, that the soapsuds may run into and mix with the other sewage matter. In the orchard I have one very wet spot, which I am now constructing a drain

4 feet 6 inches deep to carry the water from, and to save as far as possible the trouble of pumping water to dilute the sewage matter, I have also led the drain-pipes into the privy-well. If you think I have by this means supplied too much water, I will alter it; but the more immediate cause of my troubling you is the alarm I feel at what I have heard from an old gardener this day.

He tells me that when in the good old times, potash and pearl ashes were used for washing, soapsuds formed a good manure; but since the fashion for using soda had come in, so far from soapsuds being useful, he believed they were positively hurtful to vegetable life.

Now, I want you to give me your opinion on this weighty matter, as it is by means of soda, &c., with the soap, that we propose to increase our green and other crops for our—SUFFOLK BACON.

P.S.—Will Sea-kale roots, put in the ground this day (March 5th), be of any use to me this season?

[Your "ancient gardener" is entirely mistaken. Potash never was used for making hard soap; in fact, it is the alkali which is and always has been used in manufacturing soft soap; soda is and always has been used in making hard soap. So far is soda from being prejudicial, that it or some of its salts are present in almost all soils and plants, are extensively used as manures, and it is even a doubt with chemists, whether in plants soda and potash may not be substituted for each other.

We are pleased to see the arrangement you are making for the economising that most valuable of manures, and that you duly appreciate liquid manure. Your newly-planted Sea-kale will not give you an available return until next year.]

THE CULTURE OF THE AURICULA.

I SHOULD not again have ventured (monomaniac though I be), to have alluded so soon again to my favourite flower had not the following letter been forwarded to me; and as therein a pretty wide field is opened to me, I am bound in all courtesy to get into the stirrups and ride my hobby once more.

"I have been much interested in your article upon the spring management of the Auricula; for I am fond of the flower, and desire, if possible, to get a good collection of them. I am, however, ignorant of the first treatment of the plant; and though the article is very explicit, yet I should feel indebted to your correspondent if he would say something more about it, especially concerning its earliest management—I mean the time for getting them, from seeds or offshoots, the sized pots to put them in, the aspect they prefer, the kind of soil, the quantity of water, summer and winter management, the merits of the flower, &c., all of which and more will readily suggest itself to his mind.—A SUBSCRIBER, *Liverpool*."

In answer to this, my instructions were limited to the spring management of the flower, as that which more immediately demanded attention, and I intended to reserve directions as to its future culture for a later period in the year. Some of the points in "A SUBSCRIBER'S" letter, however, I shall be very glad to answer, and am glad that he lives in the very California of Auriculas—Lancashire. Though not "the land of the Cypress and Myrtle," it is the county, *par excellence*, of the Auricula and Polyanthus; and if our friend will jump into the Manchester train and go to that city of cotton and smoke, he will find in its neighbourhood all that he desires. Around its purlieus, where weavers "most do congregate," there are hundreds who in their little gardens carry on the cultivation of their favourite flower; for though I have called it "aristocratic," yet at the same time it does not refuse its smiles to any assiduous cultivator; and the man who is always on the spot, and can run out every now and then to have a peep at his beauties, brush away a troublesome aphid, pick off a dead leaf, or stir up the caked surface of a pot ("fiddle" about with them in a word), possesses a great advantage—not that this is absolutely necessary, but it greatly tends to successful management. If when there he would inquire for Messrs. Holland & Bayley, Bradshaw Gardens, Cheddeshdon, he would see with them the best and largest collection, I presume, in the north of England. And in his purchasing I would recommend him to keep to those sorts I named; inasmuch as they are of good constitution, and it is of no use commencing the growth of any flower with varieties which only long and careful cultivation will enable a grower to manage.

It will, of course, be necessary that he should have a frame. For the present any simple one will answer; and, as glass is cheap, let the sash be made of large panes—there is less likelihood of drip. By-and-by, when he gets up a collection, there are various forms of frames, any of which he might adopt, and of which I hope some day to write more fully. The present is a very good time for getting in a few, as the dangers of the winter are over, and the near approach of spring will give a sight of their beauties. Like all mere varieties, they can only be reckoned upon as true from offsets. Seed will produce immense variety, but is a portion of their culture hardly suited for a beginner. As to the size of pots there is a great difference of opinion; some putting into large, others into small. I am trying both plans this season, and shall report on the result in time to satisfy "A SUBSCRIBER." As to aspect, this varies with the season. I have said already what they like in spring. After blooming they should not get a blink of sun until October; and, above all, they must be kept from rain. Probably during the summer months a slight shower might not injure them now and then; but *damp* is the great foe of the Auricula, and therefore no water ought to be allowed to get into the *heart* of the plant—though at the same time it requires a liberal supply of water to the roots during the summer months. I hope to have an opportunity this season of seeing one or two collections I have never seen in flower yet, and to be able to give some lengthened notices of the season's bloom.

And now, having answered the larger number of "A SUBSCRIBER'S" questions, I must congratulate him on his entering into the number of Auricula growers. He asks me to speak of the merits of the flower. The merits! Ask a young mother to describe the merits of her firstborn; ask the lovesick Hyperion to describe the merits of his Saccharissa; ask the rotund alderman of the ward of Gobble-cum-swillum to describe the merits of callipash and callipee; but do not ask me to describe the merits of an Auricula.

"Her beauty hangs upon the cheek of night
Like a rich jewel in an Ethiope's ear:
Beauty too rich for use, for earth too dear."

If I had a bushel of aulpeens Mr. Beaton should have them; but I have never raised seedlings, having neither time nor space for it. I only spoke of what I have seen with those who have.—D.

VINES' LEAVES FALLING PREMATURELY.

I HAVE under my charge a vinery with four Vines, two Black Hamburgs, and two Frontignans. They have borne good crops for these last six years; but finding the wood rather weak, I examined the roots in 1859, and found them to have extended beyond the boundary of the made border (12 feet wide), and into a bed of sand, which I removed for 7 feet wide and 3 feet deep, picking out the roots carefully with a fork, and at the bottom making a floor of concrete, and a good drain along the front, leaving a depth of about 2½ feet for the soil, which consisted of light turfy loam, the top spit from an old pasture field, some broken bones, lime rubbish, and rotten dung—not much of the latter. The whole was well mixed together and the roots carefully laid on it. It was done early in October, and the border, both old and new part, was covered with half-rotten dung to the depth of 18 inches. The Vines broke well last season and bore a good crop; but three of them dropped their leaves very early last autumn, while the fourth retained them much longer. The border has been covered in the same manner this season, but, I regret to say, that since starting the house, I find the Vine that retained its leaves breaking very well and showing fruit in abundance, while the other three are scarcely making any push at all.

I may state, that, being obliged to keep some plants in the house, I had to keep on fires all through the severe frost; but as the Vines have been in former years started at the latter end of January, I think that cannot be the cause. I have at my command plenty of liquid manure, which I have been thinking of applying to the border through the growing season in order to strengthen the wood. Do you approve of such?—GEORGE ADAMS.

[Anything you have done would have no such effect as you allude to. Has the frost not got at the stems of the Vines that are not pushing? The fire to keep out frost would do no harm to the Vines, as you proved previously. We were once served so with some Vines, and on closely examining them we found

seeds at night. You may also sow a little Cauliflower seed in a few flower-pots or boxes, and put them under glass—that is, if you have time to attend to them, but not without. I have not time to attend to them, therefore I do not sow any.

If you have plenty of time, and should wish to show your neighbours that you can grow Cauliflowers as early as any of them, I will tell you how to go about it. As soon as you have sown your seeds in flower-pots or boxes under glass, procure some good turf about 3 inches thick and put by out of the way until the plants are ready to prick out; then take your turf, and cut it into four-inch squares; scrape out a hole in the under side like a flower-pot, put into that hole a bit of good soil, and plant one plant in each; keep them under glass until they have good roots, then harden them off by degrees; and when they are hardy enough to stand a little frost without being hurt, dig out holes with the spade where you intend planting them, and put a spadeful of good rotten manure into each hole, and plant your Cauliflowers, turf and all, one in each hole. Very few people will have Cauliflowers ready to cut before you. I have seen beautiful Cauliflowers cut in May from seed sown in February, and grown in this way.

OR,

(Continued from page 303.)

CELERY.

I make a small hotbed at the beginning of February in some warm corner, and place the smallest frame upon it. I then take ashes enough to plunge the pots in up to the rim, and I sow as many pots with Celery seed as the frame will hold. The best sort of Celery that I have grown for market is the *Manchester Red* and *Cole's Red*. No one seems to care about any sort of White Celery, either as plants or for use.

BROAD BEANS.

RED CABBAGE.

I always have mine ready to begin to cut by the last week in August, and have several times sold the first half dozen for 3s. The rest I sell some at 3d. and some at 2d. each. If it should happen that you have no plants, and cannot get any, lose no time in digging a bit of land in a warm border, and sow such to grow plants enough for yourself and a few dozen to sell. They will make good Cabbages, only they will not be ready for pickling so early as those sown in autumn.

EARLY CAULIFLOWERS.

You may also in February dig about half a rod of land in a warm border, and sow it with early Cauliflower, either in rows or broadcast. I always sow mine in rows. I mark out the land into three-feet-six-inches-wide beds, and have five rows on each bed. I make the rows with the back of a rake; not deep, but only just enough to cover the seed. Be sure and do not forget the red lead to mix with all seeds that the birds are likely to take, and mind to sow them as soon as ever the land is dug; and if the weather is dry I dig the land and sow all sorts of

SECOND EARLY POTATOES.

It will be time to plant the second early Potatoes the first week in March. Lose no time in getting the land prepared, if not already done. Mark out fourteen rods of the driest part of the garden—but remember that you will want ten rods of the best part of the garden for growing Celery—to plant the Ash-leaved, or rather the Walnut-leaved, Kidney upon. If it is good soil, 2 feet or 3 feet deep, mark out twenty-four rods altogether. Then mark it thus—

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(To be continued.)

EXPLANATIONS.

As regards the cost of dung, I stated what it would cost if you had it all to buy for the first year; after that I expect the pig-manure and the house sewage and charred stuff together, with about £3 worth of good stable-dung, and £2 worth of bone and guano, to be quite enough for one acre of land, and I think I stated this pretty plainly in my first paper.

As to Gooseberry and Currant trees, Raspberries, Strawberries, and Rhubarb stools, I did not think it fair play to set their cost down in the table, unless I had set down also how many I expected to sell in a year. As "L. D. M." must remember, I am writing for a market-gardener. I sell a great many of those things myself; and I although I never make it a rule to "collar" anything, which, if I understand right, means stealing it, still I never paid one penny for any of them. I honestly obtained them all as presents. The labour, of course, I expect the market-gardener to do himself, as I am writing for a little market-gardener. If "L. D. M." wishes to ask any more questions I shall be very happy to answer them, although I have to do all my writing before six o'clock in the morning.—THOS. JONES.

FORM OF BOILERS AND PIPES.

I THINK of putting up a vinery 35 feet long by 12 feet wide, and 10 feet high, this spring, and have taken some pains to little purpose to find out the best way of heating it. Amongst other books I have attentively read some volumes of your useful

work, and the result is that I am fairly puzzled with the variety of opinions given there and elsewhere. Mr. Robson says nothing is equal to a large boiler, "big enough for a man to get into," and of the saddle shape. Again, the Editors in reply to a query say they prefer the retort or tubular to the saddle boiler, and cast to wrought-iron; and that "the less water the boiler holds, and the larger the surface it presents to the fire, the more powerful will be its action." I can imagine it will be more speedy in sending a stream of hot water through the pipes, but will its action be as continuous as in a larger boiler? Some say that cast-iron boilers are highly dangerous and apt to fly; others that the rivets of wrought-iron boilers are apt to give way. One man says, "Get a big boiler by all means: you will have a large body of hot water, which will retain its heat and make all safe even if the fire get very low."

Again, with respect to pipes. I am told that flat pipes with troughs to hold water are indispensable to the health of my Vines. My next adviser tells me, "Whatever you do, have nothing to do with flat pipes;" and says I shall be a *flat* myself if I use them, and will be sure to *pipe* my eye, as they are always going wrong, leaking at the joints, breaking at the corners, and causing endless botheration and expense. My next friend is equally condemnatory of round pipes, and highly approves of flat ones, saying that the breakage and leakage are caused by the flimsiness of the pipes and the slovenly manner in which they are fitted.

Taking a common-sense view of the matter, it seems to me that if your fire can be maintained from, say, 8 P.M. till 7 A.M., and your apparatus is properly adjusted, it is of small consequence whether your boiler is large or small; but I shall feel much obliged if you can give the matter a full discussion in your pages. I am sure it will be interesting, and will probably evoke from your correspondents a multitude of hints which may be of value.—J. M.

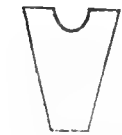
[We have little faith in the usefulness of such a discussion about boilers. Your own letter, and what we know and hear from gardeners every day just at present, prove "that what is best administered is best." Of course, a large boiler retains the heat longer after the fire has gone out; but it is all the longer heating, and therefore unsuitable when sudden heats are wanted to meet sudden colds. A fire may always be so managed as to keep up a continuous heat when necessary. We are thoroughly convinced that a good gardener, by his own management, would undertake to make any of the popular boilers act satisfactorily both as respects efficiency and economy. More depends on the setting and the management than on the mere form of the boiler. Our experience leads us to favour those of the simplest construction. See what Mr. Fish has lately said on boilers, and what he says to-day about Mr. Rivers' small boiler. We have in use flat pipes that have been employed for thirty years without a chip or flaw; nevertheless, we prefer round pipes, and evaporating-pans can be supplied to them as easily as to flat ones. On the score of economy small boilers are cheaper than large ones, and a small one ought to do for your vinery.]

GLEANINGS FROM SAWBRIDGEWORTH.

(Continued from page 335.)

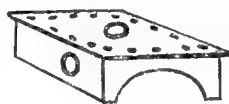
ALMOST the whole of these houses are glazed in a uniform manner with glass 20 inches by 12 inches, and I did not notice a single breakage by the frost. The fixed rafter sash-bars, according to their length and as they were braced or not, were from 2½ by 1¼ to 3½ and 4½ by 1½ inches. One house, glazed on the plan of Mr. Monro, inventor of the cannon boiler, looked very neat—has no putty on the top, but each large square is fixed by four screws to the sash-bar, a piece of Indianrubber or leather being placed between the glass and the screw. In exposed places in high winds it was thought that the glass might chip against the screws. These rafter sash-bars are hollowed in the middle to take off drip and water, the glass being laid upon and fastened on the flat on each side of the hollowed groove.

Though most of these wood-and-glass houses are properly orchard-houses, having no heat—except in very severe nights a few pans of lighted charcoal when the trees are in full bloom—a number of them are heated to any required temperature, either simply by brick Arnott's stoves



alone, or by these stoves in combination with a small boiler

placed on the top of a brick stove, communicating with tanks or pipes, or both. The use and the mode of making such stoves were given in a late Number. The first I saw at the nursery was a very nice one in the entrance-hall of the house, painted black—partly, I suppose, for appearance, and partly for radiating heat more freely; and the heat given was of a mild satisfactory character, more pleasing than from any iron stove. The second I noticed was of the larger size, some 2 feet 10 inches in the square, and 3 feet 10 inches in height, placed in the middle of a lean-to house a couple of feet or so from the back wall, and a small brick chimney for taking the smoke out, and furnished with a pan of water on the top, which seemed nice and warm. That house was about 60 feet long and 12 feet wide. There was a wide platform in front filled with dwarf Roses in pots; and the floor behind, except a small space for passage, was filled with standards and taller Roses, all breaking nicely or in leaf, to afford material for cuttings, budding, &c., and I never saw a lot more healthy. The atmosphere, from the moisture in the pots and the evaporating-basin combined, was of a moist, genial character; and from much use in noticing the temperature of houses on entering them, I should say that the temperature at the two ends of the house was from 57° to 58°, and at the centre opposite the stove close on 60°. For economy in fuel no plan can beat this. These stoves, however, are frequently placed, so that, though all in the house, the fire can be made from the outside like a regular furnace and flue; and in many cases, instead of the plate of iron on the top, covered or not covered with tiles, a small boiler is fixed there, and pipes taken from it in the usual way. These boilers are 14 inches, 16 inches, or 18 inches square, to suit the different sized stoves, and are



made by Mr. Hughes, of Bishop Stortford, at from 30s. to 35s. each, and are just small flat saddle-backs. An old one was lying at the end of a house, which, without measuring, I should judge to have been 14 inches square (see figure), depth at ends from

3 inches to 4 inches, and in the centre of the curve 2 inches, holding altogether about two gallons of water. The flow-pipe was placed on the top, and the return in the end. This is a very different thing from the proposal of a correspondent the other week to heat a small tank in a greenhouse from a some fifty-gallon boiler. Far better have one of these stoves and boilers at once, or such a one as that recommended by Mr. Allen.

Two-inch pipes were at first used for connecting the boiler with the other heating medium, whether larger pipes or tanks; but three-inch and even four-inch pipes are found to be better fixed on the boiler at once. When the house is large, though the stove and boiler are inside, it will be best I presume to have the feeding-door and ash-pit outside, to permit of the fire-box being sunk sufficiently to give a good rise to the flow-pipe. Some vineries were thus heated, the Vines being grown not only for the fruit, but for securing plenty of wood that can be depended on as true to the kinds for propagating. One of these had the pipes beneath a wide platform in front, and above the pipes a shallow tank, with openings to furnish a nice moist heat for myriads of Vine cuttings. A large span house, 70 feet long, 20 feet wide, 4 feet high at the sides, and 10 feet at the ridge-board, was divided into three beds, one in the middle, and one on each side, the pathways being about 15 inches deep, and the same in width, with pipes from stove-boiler beneath the beds, filled with grafted Peaches, &c., to be succeeded in May by young Vines in pots. These Vines reached last season to the apex of the roof; and though no air was given except by the hinged boards at the sides, and the small opening over each door at the ends, I was assured that not a leaf was scalded or burned.

Another house in the same style is honoured with Figs in summer. But I must not enlarge on what these small boilers on the top of a small stove are capable of doing by mentioning the particulars of more houses, but will finish with noticing one which would be a great comfort to many of us gardeners as well as amateurs. This neat span-roofed house is 80 feet long, 10 feet wide, 8 feet in height to the ridge-board, and 4½ feet high at the sides. It is divided by a pathway down the middle which thus forms a bed or pit on each side. The height of the wall of these pits, surmounted by a wooden-wall plate, may be about 2½ feet above the level of the pathway. These two pits are heated by one of these small boilers, with plunging material over the pipes. These pits were filled from end to end with small, fresh-grafted plants of Roses, Peaches, Oranges, &c. Just enough of heat was given to start

them *gently*, as on this last word the success depends. These pits are furnished with short sashes, reaching from the sides of the house to the pathway, so that the plants beneath them may be shaded, kept close, or a little air given by elevating the end of the sash next the pathway just as may be desirable. In summer when the plants have all taken, the sashes over the pits are removed, and the house devoted to Cucumbers and Melons.

Whole houses heated by these stoves and boilers are filled with Tangier and St. Michael Orange plants, chiefly the former, resembling in foliage the Mandarin; Mr. Rivers contending that in a light temperate house in winter, and in a high temperature in summer, these fruits may be obtained as good in this country as at Lisbon. The general mode of keeping these plants in dark houses in winter, and the turning them out of doors in our summers, is not only something barbarous, but will never give us fruit worth eating. We are constantly having dunned in our ears the political axiom that the demand will ever regulate the amount of supply; but Mr. Rivers knows full well that there are many things for which there would never be a demand at all but for the knowledge that the supply was already provided.

It is preferred that these span-roofed houses should stand not direct north and south, but north-east and south-east: Whether if so arranged in groups that the heated ones could have been heated as economically by one large boiler, I am not prepared to say. Within these few weeks I have had confirmation strong of the propriety of the recommendation; that when so heated, a reserve-boiler should be secured for safety. Several large establishments, from the bursting of the large boiler, and having no reserve, were wholly at the mercy of the frost. When the houses are heated separately, as at Sawbridgeworth, if such a thing as one boiler had given way, the stove still remained; and if that was not enough, the plants could have been moved or covered.

In these heated houses, even the span-roofed ones were at first provided with some means of ventilation at the apex of the roofs. In early forcing, even of span-roofed houses, I should like these openings still. For lean-to houses, cool or warm, I should consider ventilation there indispensable. That, I believe, is still the opinion of Mr. Rivers; but for all span-roofed houses he now depends *entirely* on side ventilation, and none at all in the roof, having only an opening over the door at each end—the triangular piece, in fact, below the ridge-board. The other week I stated that I believed this would answer well in houses not more than 30 feet or 40 feet long, and of a good width—say 20 feet, and where the plants were dwarf rather than tall; but Mr. Rivers makes no distinction as to width or length of house, or height of plants, as I have noticed in the case of the Vines rising up to the apex of the roof. This is not only one of the greatest *novelties*, but adds greatly to the simplicity and economy in the construction and management of glass houses for plants. The system, it is true, is opposed to our preconceived notions of the ascent of heated air, and the undesirableness in early spring of allowing a stream of cold air to enter among the plants near the base of the building, or 18 inches or 24 inches from the ground. That is prevented in houses having heat given early by hanging thick woollen netting over the openings made by the hinged boards, which so far sifts and mellows the air before it gets free play to rise and descend again inside as it likes. Mr. Rivers, perhaps wisely, eschews all theory on the subject, but bases his system on his own continued successful practice, leaving to others to explain *how* the air circulates, and *how* plants at the very ridge of the house are not injured. Every day tells us that in these matters we have much to learn, and, perhaps, a good deal to unlearn.

At page 93, and also at page 158 of the present volume, will be found plans and directions for forming the curate's single and double vinery. The trench is now dispensed with. The surface of the ground is covered with slates; and the little moveable structure of wood and glass is set on a row of loose bricks, with openings left between them for air. The temperature at the ridge-point must be high when the sun shines; and yet the fresh air from the bottom openings must rise and get there, as the bearing-spurs which rise towards the top are never injured. The principle of giving air to these little ridged structures—2½ feet wide, 15 inches high to the apex, and a sloping glass roof on each side of 20 inches—is much the same as that resorted to by the hinged boards on the sides of large span-roofed houses, 20 feet wide and 100 feet in length.

A long flat trellis of Pear trees on Mr. Kerr's system was looking well as respects fruit-buds, and was protected with sashes 8 feet long laid across above them, resting on a rail sup-

ported by posts on each side, all below the posts and rail being open to the ground. These sashes are removed at the end of June.

But I must stop these desultory reminiscences by stating my conviction that everywhere there seemed evidence of thorough system, forethought, and great attention to minutiae, as respects simplicity, economy, and yet thorough effectiveness for the object contemplated; and also by recording my impression that much of these beneficial results is owing to a thorough carrying out of the division-in-labour principle, as, leaving other branches to other establishments, the nursery may just be considered a huge manufactory for forming Rose plants, and more especially all kinds of fruit trees.

R. FISH.

BRIAR STOCKS FOR ROSES—CUTTINGS OF IVY.

HAVING collected a number of Briars for Rose stocks, I shall be much obliged if you will inform me how I am to prune them. If cut at present to the required height, will they break freely?

[Yes, cut them to the required height and they will break freely; but you are late.]

Being about to plant some Irish Ivy, and not having any plants previously prepared, if I were to select shoots taken carefully from the wall with plenty of fibre and plant them, would they grow, or which is the best mode of propagating them?—A SUBSCRIBER.

[Ivy does just as well, and often very much better, to be planted without roots; that is, roots in the open air, as those now clinging to the wall. Cutting off the same Ivy without roots now, will, in three years, be as far forward as the best shoots you could now select for planting. But do it your own way and tell us in the autumn how it has succeeded, or try some both ways.]

THE ROOTS OF FRUIT TREES.

I HAVE in the course of my experience for half a century seen such grave errors made, both in planting and after-management of the roots of fruit trees, that I have for a long time had it in idea to write a warning against mistakes, and give plain directions how to avoid them. In different parts of the kingdom I have noticed large orchards with the stems and branches of the trees thickly covered with lichens and moss. In consequence of the closing up of the pores thereby, the trees were dwarfed and weak, and the fruit scarce in quantity, and exceedingly poor in size and quality. This is a state of extreme in bad management on the starving principle. Then, on the other hand, I have observed many large collections of fruit trees that have grown so luxuriantly that they produced scarcely anything but wood—more like forest trees than trees intended to bear plentiful crops of large, well-coloured and richly flavoured fruit. This is the other extreme of the too high and gross-feeding principle. Now, as it is probable that some of our readers may have orchards or gardens in either one or the other of these unprofitable states, I shall endeavour to point out the methods they should adopt to remedy both evils.

I will suppose first, that an orchard of fruit trees in the starved lichen-covered condition was put under my care to be improved and brought round into a healthy bearing condition. I should expect to find on examination that the trees were not too old or too far gone as to be past recovery. I should first examine the soil and subsoil: most likely I should find the first not very deep, and the second either wet gravel or wet clay. I should then, in August or September, cut drains 4 feet deep, or at all events as deep as I could get an outlet for the water. If the land was very wet, I should conclude it necessary to have a drain every 15 feet—that is, 15 feet apart; but if not so very wet, then one every 25 feet would be sufficient. At the bottom of each drain I would lay flat tiles, and upon them draining tiles in this form Ω . They are easily procured at any tile manufactory. These I would pack firm in their place with small stones or brick ends, covering them quite over. If such material were plentiful I would fill the drain up to within a foot of the surface; but if not, then I would fill up with small, tight-tied bundles of brushwood. Whilst this draining was being done, I would have all the stems and branches of the trees scraped in order to get rid of the lichens and moss; and then when the leaves had

fallen, the whole of each tree should be painted over with quick lime and fine clay, mixed together with sufficient water to form it into a paint-like consistence. The clay should be carted away, and if convenient laid in a heap and burnt. It will make an excellent dressing for the land afterwards. If it is gravel, it would do no harm to spread it on the surface immediately. This work being all completed and the weather favourable, I would set to work a number of labourers to trench the ground, the manner of doing which I will describe hereafter.

In order to give the roots of fruit trees in an orchard-house a fair scope, I should proceed, after the draining was completed and the trees cleared of parasitical plants, to trench the ground. I should proceed to do this in the following manner:—I should set out on one side of the ground a breadth of land 60, 80, or 100 feet broad—just enough to give room for the diggers to work. I should direct the men to open a trench the length of the piece set, and about 3 feet or 4 feet wide. All the soil of that trench should be wheeled away, and laid in a long ridge on the adjoining breadth of land. It is intended to fill up the trench on returning from the other end of the orchard. When this is done then set out with a line the next trench of the same width. I should take a thin spit off the top and throw it into the bottom of the trench, and upon that I should lay all the soil and even a little of the subsoil also, unless it was very bad indeed. If the bottom is exposed to the air it ameliorates and is improved. By this deep trenching there is, of course, a larger pasture for the roots to roam in. As the work went on, I should necessarily come across the trees. The roots of these I should carefully preserve, without injuring even the smallest fibres. When the entire roots of one tree are all loosened so that the tree can be lifted out of its place, I should examine them, and any that were cankered or decayed I should cut with sharp instruments clean off to a sound part. It might be necessary to prune in part of the branches also, so as to balance the tree on every side or not—at all events I would cut off all that were dead or cankered.

All these points having been attended to, I should then replant the tree in the fresh newly-trenched soil, spreading the roots equally on every side. I should first, however, consider whether the subsoil was unfavourable or not. If it evidently was, then I would adopt my latelamented friend, Mr. Errington's plan of forming stations for every tree—that is, laying a platform of four-feet or five-feet-square stones or brick-ends, covered with lime grouting under each tree, so deep as to allow room for soil enough over it and over the roots to cover them. If the situation of the orchard exposes the trees to strong currents of air, and the heads of the trees are large, then I should have them secured so that they would not be loosened or blown down. The best way to do this is to procure a sufficient number of short, strong pegs, and drive down very firmly four of them to each tree, at the opposite points of the compass. If the trees are of a moderate size, the pegs should be driven in at 15 feet distance from the stem of the tree; if smaller in size, then 10 feet would be sufficient. Then have four lengths of wire sufficiently strong, or tarred rope would do. These I should fasten one end of each to the tree, and the other ends one to each of the pegs, or, if you like, call them stakes; the stays would then support the tree from every quarter the wind might blow from. I have repeatedly proved this method, and have found it the best plan to prevent the winds from blowing down newly-planted large trees.

If any of the trees should be found to be in a very bad state, both at the root and the head, I should then discard them and plant young ones in their place.

Having attended to every tree on the piece—that was, trenching and done all that was necessary to them right across the orchard, I should have a trench at the far side to fill up. I should set out another breadth of land of the same width as the first; and having a trench at the end of it to open, the soil that came out of it would conveniently serve to fill up the open trench.

In this way I should proceed till all the orchard was completed, and should then expect to see the trees restored in a few years to perfect health, and soon produce abundant crops of fruit to repay the labour and expense I had been at. Having paid attention to put the roots into good order, I should try to keep them so by giving a dressing with a compost of soil, lime, and dung every third year. The heap should be put together and turned over several times for twelve months previous to laying it on. The surface of the soil should be stirred once a-year with a five-pronged fork. It should never be dug or

ploughed, for these operations destroy the best of the roots—those that are near the surface preventing them from having the benefit of the air and sun. The orchard generally is converted into a pasture—a sort of home-paddock for, perhaps, milk cows or sheep. This is a bad system. The cattle trample the ground till it is very hard, which cramps the roots, and they rub against the trees, injuring their bark, and also crop the lower branches by browsing upon them. I would not allow any cattle in my orchard. "But," says the farmer, "can I—may I not make some use of the land I have thus drained and trenched?" Certainly, my friend, you may. When the trees have made good roots and have fair-sized heads, you may, if you like, sow it down with such a crop as will not injure the trees. After the forking over and covering the land with the above compost, you may sow Turnips, or Rape, or even Lucerne, to be mown and carried out to the cattle; and in time, when the trees are approaching to each other, you may sow the ground with grass seeds—only always remember to mow the grass, and give it to the cattle out of the orchard. This may seem needless; but I do believe more orchards are destroyed, or at least rendered unproductive, and consequently unprofitable, by turning cattle into them than by any other cause (wet land excepted) whatever. I conclude this part of my subject by reiterating that in the first place make a good pasture for the root, take care of them afterwards, and you will have fine healthy trees in your orchard.

T. APPLEBY.

(To be continued.)

TO CORRESPONDENTS.

VARIEGATED GERANIUM CUTTINGS (T. F.).—They are struck in autumn just the same as those of other Geraniums. Their treatment after the winter is stated at page 313 of No. 648.

PEACHES AND VINES (Nemo).—The Peaches you name will give you first-rate early and late fruit. The Vines may be one Muscat, one Sweet-water, two Hamburgs, black, and one West's St. Peter's, to hang late. In either case the stages in the greenhouse and hothouse should be low.

GROUND GLASS FOR GREENHOUSE ROOF (J. C., Glasgow).—Your last line solves the whole matter. Such glass is an advantage for all greenhouse plants in summer if not too much obscured. We find plants do well under it at all times, as the rays of light pass through it sufficiently, whilst much of the heating rays are kept out. We confess we like the appearance of common glass best; and it is easy to put up curtains of thin gauze or bleached calico in summer, with rings under the sashes, and leaving them on from May to October. Still we have no doubt your ground glass will do.

CUCUMBER, IS IT A FRUIT? (J. Crossling).—The Cucumber, speaking botanically, is certainly a fruit; but speaking pomologically it is not. In the latter sense, that is only a fruit which is used in its ripe state. A Melon is a fruit; but a Cucumber is a vegetable, or salad, or both. It is a vegetable when stewed or boiled, and it is a salad when eaten raw. The Cucumber, therefore, in the gardening sense of the term, is not a fruit.

DESMODIUM GYRANS (W. W. B.).—This is synonymous with *Hedysarum gyrans*. Keep the seeds in hot water for six hours—say at 120°, and then sow in a hotbed. The chief attraction of this plant is that its lateral leaflets move up and down, sometimes steadily, sometimes in jerks, without any apparent cause. This spontaneous motion is most exhibited when the sun shines on the plant, and the house in which it is growing is shut up warm. It is popularly known as the "moving plant."

MANAGEMENT OF ORCHARD-HOUSE (Ignoramus).—There need be no nuisance with the fire if properly managed. The air-drain will do no harm, but the furnace being inside will not cause it to burn a bit the worse if there is a sufficient rise—say 18 inches from the bars to the neck of the flue. Of course, the increase in the size will lessen the effect of the heat on the Vines. See Mr. Fish's description of Mr. Rivers' stoves and small boilers. When the flue has been unused, use very dry chips to heat the furnace at first. The one-foot shutter will not be sufficient; better have 15 or 18 inches. The West's St. Peter's Vine will do. Plant it near where the flue commences, it will hang longer than the others.

FRUIT TREES IN POTS—GROWING SPERGULAS (J. T.).—No one can tell why your fruit trees in pots have failed without seeing and knowing more about them. Shake all the soil from the roots of the plants which went wrong, and plant them on some good piece of ground for one season, and keep them clean and clear from insects the whole season. Yours is a most luxuriant specimen of our native *Spergula saginoides*, which is so broad in the leaves, and they spreading out quite flat on the ground, that it looks quite different from *Spergula pilifera*; but in our specimen plot at this moment it would be difficult to tell *pilifera* from *subulata*. All the kinds which we have received by post have resolved themselves into *subulata* and *saginoides*. Every one which was sent to us as *pilifera* in 1859 has turned out to be *subulata*; and we have the true *subulata* from, and tallied by, the author of "Cybele Britannica" on purpose to decide the kinds. As far as we can judge, none of these kinds should ever be planted in the autumn. From February to April is the only time to transplant them. As *pilifera* likes strong clay land, and *saginoides* the looest of our sandy soils, the two must be grown together and crossed for an intermediate breed to suit all lands. But our eyes and fingers fail us now in bigger game, else we should soon improve *Spergulas* to suit every region of the temperate parts of the globe.

CUTTING DOWN VINES NEWLY PLANTED (O. O.).—Cut the rods down to four eyes immediately, or they will bleed. Do not give any artificial heat; the rods will come all the stronger if you let them grow gradually. If the soil is dryish, water them. Keep the air moderately moist, and ventilate freely.

VINES IN POTS—ANNUAL FLOWERS (T. H. J.).—The Vines having their roots into the border will fruit all the better. The glass will do admirably for plants, and for Vines if not forced early—that is to say, if not too obscure. For annuals take the following:—*Acroclinium roseum* (h-h.a.); *Ageratum cœruleum*, *A. coelestinum nanum* (h-h.a.), *A. mexicanum*, *A. odoratum*; *Alonsoa incisifolia*, *A. Warczewiczii*; *Alyssum argenteum*, *A. maritimum*; *Anagallis* of kinds (h-h.a.); *Bartonia aurea*; *Brachycome iberidifolia* (h-h.a.); *Calliopsis Atkinsoniana*, *C. atro-sanguinea*, *C. mar-morata*, *C. Drummondii*; *Callichroa digitata*, *C. pedata* (h-h.a.); *Campanula specula*; *Cladanthus arabicus*; *Clarkia pulchella*, *C. alba*, and many varieties; *Clintonia pulchella* (h-h.a.); *Collinsia*, sorts (sow twice); *Convolvulus minor*, varieties; *Dianthus Heddewigii*; *D. laciniatus* (h-h.a.); *Eutoca* of kinds; *Godetia rubicunda*, *G. Lindleyana*, *G. rosea alba*; *Hibiscus africanus*, and others; *Iberis* of kinds, but must be of proved seed; *Kaulfussia amelloides*; *Leptosiphon* of kinds, must be prevented seeding; *Lobelia speciosa*, *L. gracilis*, *L. ramosa*, &c. (h-h.a.); *Lupinus nanus* for dwarf, Hartwegi, mutabilis and many more for tall beds; *Mimulus*, mixed variegated, for damp place; *Nemophila insignis*, sow in April and June, and others the same; *Enothera bistorta*, *E. Veitchii*, *E. Drummondii*, *E. taraxifolia*, &c.; *Perilla nankinensis* for foliage; *Petunias* of sorts (h-h.a.); *Phlox Drummondii* varieties (h-h.a.); *Portulaca* of colours (h-h.a.) for sandy gravelly places or rockwork; *Saponaria calabrica*; *Silene pendula* and others; *Tropæolum Tom Thumb*, scarlet, T. yellow; *Verbena venosa* and others; and add China Asters, Stocks, Marigolds, Zinnias, &c. H-h.a means half-hardy annual, to be raised in heat and planted out.

PROTEST (An Old Subscriber).—You are quite right; we did not notice the paragraph until too late.

SEED POTATOES SLIGHTLY FROSTED (E. H.).—Though they taste sweet when cooked, yet, as they still vegetate, we should have no hesitation in planting them.

MELON CULTURE—MYRTLE FROSTED (W. D.).—Treat the Melon the same as the Cucumber, only give a little more heat by a stronger lining or less air; also use strong loam instead of light rich loam, when your plants have three or four large leaves. Then, as the fruit gets to its last swelling, keep the atmosphere dry; and if water is needed, try and give it without wetting the surface of the soil. Endeavour also to set as many fruit as you want at once. One plant would be enough for a space 6 feet by 3 feet, and about four fruit would be enough. If not set at the same time, if one fruit is set and takes the lead, you will have difficulty in setting more before it is ripening. Leave the Myrtle alone, keep it cool, and when it pushes out back to the live wood, and not before.

GARDENIA RADICANS GROWING WEAKLY—CYRTOCERAS REFLEXA SHEDDING ITS BUDS (J. B. P.).—Plunge the Gardenia in a sweet bottom heat of tan or sweet dung, and harden off for the greenhouse as the plants come in bloom. When done blooming, repot in peat and loam, and encourage growth. The *Cyrtoceras reflexa* (now called *Hoya coriacea*), will drop its buds if kept too wet in such dull weather, or very dry during several bright days. The soil should not be too retentive of moisture.

CIRCULAR ROSERY (M. M. P.).—Your request is only another form of what we have explained from the beginning as an impossibility. We cannot plant a place we have not seen. If you will first arrange and plant your pretty plan for a rosery, and send it to us for our opinion and for such suggestions as may be thought useful, you may command our aid. However, Roses, no matter how arranged, will never rise higher in the arrangements of flower gardens than as neutral beds, white kinds being so accepted. The wisest resolve which we have registered since the new year was that by Mr. Donald, of Hampton Court, in which he is to plant all the dwarf Roses in that large garden on their own roots and in neutral beds. We had the tale from himself.

PLANTING OLD-FASHIONED FLOWER-BEDS (S.).—You have really succeeded in making the best of a very difficult garden to plant. 9 and 26 are the only two beds we disapprove of. Pass 9 round as edging to 15 and 19; remove 26 and put it in 9; then, if you could repeat 7 in 26, you would make a gem of it. If not, any *Diadematum* or young *Prince of Orange* would match 29 better than the Unique.

ANNUALS NEAR DRAWING-ROOM, &c. (Belfast Subscriber).—Blue *Nemophila*, *Collinsia bicolor*, *Gillia tricolor*, and the purple and white *Clarkias* and circles of *Mignonette* round the beds, are the best annuals for your purpose for the first part of the season; and to follow them use China Asters, Stocks, Ten-week Stocks, French and African Marigolds, *Lavatera* and *Pescicaria*. And if you could get up *Saponaria calabrica*, so as to transplant it out in July, and use it like *Mignonette* in broad belts round the outsides of the beds, it would make a good addition; but to attempt flower-gardening with annuals is a chimera—they are only fit as helps to supplement the permanent bedders. The *Magnolia fuscata* you have just heard about seems to be the very plant to suit the back of your greenhouse. It is very easy to make it grow if you get a good plant and see that a fresh border is made for it.

SALTING ASPARAGUS-BEDS (A Reader).—Your employer is quite right. Do not give the beds a heavy coat of salt at the time you fork the surface, but merely a slight sprinkling, and repeat that sprinkling once a month until the stems are dying off in the autumn. *Asparagus* is a native of the sea-coast, as is the Sea-kale, and both of them are invigorated by salt.

NAMES OF PLANTS (W. H.).—Your plant is *Chaerostoma polyanthum*, a native of the Cape of Good Hope. There are a drawing and description of it in the "Botanical Register" for 1847. (Mrs. Boucher).—A very good specimen of *Lastrea filix-mas var. incisa*.

POULTRY AND BEE-KEEPER'S CHRONICLE.

POULTRY SHOWS.

MARCH 13th and 14th. PLYMOUTH. Sec., Mr. W. R. Elliott, 5, Windsor Villas. Entries close March 1st.
APRIL 1st and 2nd. SUNDERLAND. Sec., John Littlefair, 6, Bridge Street. Entries close March 19th.
MAY 21st, 22nd, and 23rd. CHESTERFIELD AND SCARSDALE. Hon. Sec., Mr. Thos. P. Wood, jun., Boythorpe House, near Chesterfield. Entries close May 1st.

MAY 22nd and 23rd. BEVERLEY. Hon. Sec., H. Adams. Entries close May 4th.

JUNE 4th, 5th, 6th, and 7th. BATH AND WEST OF ENGLAND. Steward, S. Pitman, Esq. Entries close May 1st.

JUNE 28th and 29th. TAUNTON. Sec., Mr. Charles Ballance. Entries close June 14th.

JULY 2nd and 3rd. BLACKPOOL. Sec., Mr. E. Fowler, jun.

N.B.—Secretaries will oblige us by sending early copies of their lists.

MORTALITY AMONG DORKING CHICKENS.

I HAVE lost a quantity of my Dorking chickens this year, the cause of which I cannot discern. At about ten days or a fortnight old they drop their wings and appear to have no use in their legs; at the same time eat well. I have kept them from the time of hatching in a second-floor room (wood floor), and fed upon crumbs of bread, boiled eggs, wheat, rice, groats, and a little cooked meat. Sand is thrown about the room, and, of course, they have a good supply of water.—BANKER.

[The cause in all probability of the mortality among your chickens is divided between the locality and the diet. On a boarded floor young chickens will not thrive, and would do better under a shed or even under the shelter of a dry bank. An artificial floor is much against them should they live; they generally become deformed both at the knee-joint and toes; the nails of these latter turning up in the air instead of being hooked and adapted for scratching in the earth. All Cochins fanciers will remember how many birds with these defects were seen in the days of the "mania," when birds were forced into early maturity in greenhouses and warm rooms to get them into the market before the price declined. We remember seeing the birds of one lady, an enthusiastic fancier, who had given up her conservatory to her chickens. Their toes from the hard floor had all taken the upward direction; and to remedy this she manufactured several sets of splints for their feet, and the unhappy chicks wore them by turns. With regard to the food, it is all good except the rice and meat. For some of the groats and hard corn you should substitute meal, or else you give the digestive organs of birds so young too hard a task, and that under circumstances in which they can get but little help from Nature. If you have no other place than the chamber you mention for them, give them in one corner a good heap of ashes to dust in, and some rough grit (not sand) from which they may get little stones, &c. Some fresh lettuce leaves, if your garden now affords them, would be appreciated by them much.]

POULTRY KILLED BY EXCESSIVE FEEDING.

WE have lost two Ducks and three hens. They have laid up to the day of their death. The Muscovy Duck accompanying this took its breakfast well and heartily. She was discovered two hours afterwards lying on the ground with her legs stretched out straight behind, snorting and breathing violently, had a succession of struggling fits, which were relieved by chloric ether and plunging her in hot water, after which she was quieter, and laid an egg on the hearthrug before the fire. We then gave her castor oil in a little sherry. She slept about three hours. when the fits came on again. We had no more chloric ether at hand. She died in the second fit.

The Brahma Pootra hen sent with this went into the nest on Sunday, as if to lay. Remaining three or four hours and not laying, was taken off. She walked very well across the yard, and ran into a corner. She voided slime, white and yellow like half-formed eggs, was put in a basket, had a pill of calomel, and tartar emetic, supposing it to be disease of egg-organs. Next morning seemed better, ate nothing, died 10.30, by side of parlour fire.

Food.—Indian corn boiled six hours, barley and oats alternately, scraps from kitchen, and one-quarter hour daily run in garden.—DAISY AND LADY.

[After a minute and careful examination of the hen and Duck, the only conclusion we can come to is, that they were killed by kindness. On opening the hen the gizzard, intestines, and ovary were all found to be enclosed in solid yellow fat, just such as is produced by an Indian corn diet. The embryo eggs had burst and lost all shape, forming a mass of fatty, pulpy matter mingling with the intestines. The gall-bag had disappeared, the liver was very pale and flaccid, and the heart very fat, the lungs healthy. From the great quantity of fat in the bird it is a wonder that she had not died in laying before now.

The Duck had been diseased for some time; but all the

intestines gave evidence of the same over-feeding as those of the hen, save that in this case the liver was extensively diseased.

To prevent a similar fate for the other birds in the same yard, we would recommend for the fowls strong doses of castor oil on alternate days for a week; a total change of food, abolishing all the Indian corn and table-scraps, substituting a light feed of oatmeal and barleymeal in the morning, a very little whole corn at mid-day, and an evening meal like that of the morning.

For the Muscovy Ducks, if there be any survivors, they for a time should be made to find the principal part of their sustenance in the garden, be turned into it when hungry in the morning, and be fed with a little whole corn at night when going to rest.]

EGG-HARVEST.

I FEEL much pleasure in answering "DEODAR'S" requests made at page 344, in reference to my statement at page 325.

The number of hens I had varied from twenty-five to thirty in the year, killing four or five of the old hens in the autumn, which I do regularly once a-year.

My rule is to keep eight or nine old hens (three years old), eight hens of two years of age; the remainder are pullets. That is the way to insure eggs and chicks. The old hens sit early; the next sit about March or April; the pullets are not allowed to sit at all, as you cannot depend on them. Kill off all your old hens, and supply their place with pullets every year.

My breed are a cross between Dorking and Game. One year I have Game cocks, the next Dorkings. I never keep cocks of my own breeding, buying fresh ones every year—that accounts for the number of chicks which I obtained. I had four cocks for twenty-five hens. They have a small meadow to run in—about three-quarters of an acre. They always feed themselves in the pigstyes, but they have a little Indian corn and barley.

My chickens are very late this year, one dozen in one brood one month old, and six in another (the hen in this got off her eggs for two or three hours); another brood of nine, and one brood of seven ducks, and three chicks. Never sit in your hen-house, have a place separate.

Can you tell me the cause of my Ducks stopping to lay. They all were ill for three or four days? One seemed as if it was drunk, and another not caring to move. They just commenced to lay again. They laid from thirty to forty eggs before Christmas, and about fifty since, from five Ducks. If you can explain the reason of the above maladies I shall feel much obliged.—AN AMATEUR.

[It is impossible to divine the cause. If the Ducks had not so speedily recovered we should have concluded that they were over-fat, and that the pressure on their egg-passages determined the blood to their heads. If the symptoms do not return we think they must have eaten something poisonous.]

COMING POULTRY SHOWS.

SUNDERLAND.—The entries must be made on or before the 19th instant. Includes Pigeons and Rabbits. Prizes chiefly 30s. and 10s. Sweepstakes 5s. each for Game Cocks, and Game Bantam Cocks. Entrance-fees from 4s. to 1s. 6d. Prize money paid within fourteen days.

BEVERLEY.—The entries close on May 4th. Prizes chiefly from 7s. 6d. to 30s. Includes Pigeons and Canaries. Sweepstakes 5s. each for Game Cocks and Game Bantam Cocks. Special prizes (additional) for best pens of Game fowls and Pigeons. One is also offered "for the most perfect pen of poultry exhibited," which may prove rather a puzzler for the Judges. Entrance-fees from 2s. 6d. to 1s.

BATH AND WEST OF ENGLAND.—Entries must be made on or before May 1st. Prizes vary from £4 to 10s. Entrance-fees from 6s. to 2s. 6d. per pen. Sweepstakes of 10s. 6d. each for Game, Spanish, Dorking, Cochins-China, and Game Bantam Cocks. A silver cup, extra, will be given to the best pen of Bantams.

CHESTERFIELD AND SCARSDALE.—The entries to this close on the 1st of May. Prizes vary from £2 to 5s. We regret there are no separate classes for Rouen and Aylesbury Ducks—they cannot be judged satisfactorily in the same class. There are two or three good additions to the rules. "The Committee hold themselves personally liable for the payment of the prizes offered." "No person will be allowed to take a fowl out of any pen during

the Exhibition; and a catalogue and prize list will be promptly forwarded to each exhibitor." There are sweepstakes for Single Cocks, and an extra prize of £1 to the exhibitor who makes the greatest number of points. For Pigeons, Rabbits, Canaries, and British Birds prizes are offered. The entrance-fees per pen vary from 1s. 6d. to 3s. 6d., and for the Sweepstakes, 5s.

PRESTON POULTRY SHOW.

THE sixth annual exhibition of this large and important Association was held on March 6th and 7th, in the Corn Exchange, Preston. The collection of fowls and Pigeons was of a very superior character, as may be surmised from the fact, that in addition to six pieces of plate, varying in value from £4 to £10, nearly £200 in money were distributed in prizes. Such an attraction of necessity called forth the energies of many of the most renowned exhibitors, and the Show was undoubtedly worthy of the names which appeared in the catalogue and prizelist. The first classes were devoted to *Game*; and as the Show is held in a locality where this breed has so very large a number of admirers among all ranks of society, it is hardly necessary to say that these classes were of a very first-rate character.

The President's Silver Cup, value £10, for the best Game cock, called forth a very strong competition. The Judges remarked the class was a splendid assemblage of birds. Mr. Moss was again successful in securing this prize, as we believe he has been for several times in succession.

The *Single Game Bantam Cocks* constituted a class such as we never see except at this Show. Nearly thirty birds were exhibited, and nearly all were of very superior character. The Cup was awarded to a willow-legged Black Red, belonging to Mr. Martin Turner, of Preston—an exquisitely beautiful miniature of a first-rate Game. The pen was marked "sold" at £10 10s. within a few minutes of the opening of the Show.

The class of *Game Hens* formed a very attractive feature, there being nearly thirty pens of very good birds.

In the general Game classes Mr. Moss was again remarkably successful, taking two first and one third prize.

In *Spanish* Mr. Teebay was victorious with the birds that have been so successful during the past season, the extraordinary face of the cock far surpassing that of his competitors.

The *Dorking* class was the opprobrium of the Show. There were some few good birds, but not a really first-class pen in the Show, several being disqualified by containing diseased or deformed birds.

The *Cochin* classes included the names of many of our most successful exhibitors. Messrs. Cattell, Tomlinson, and Stretch taking the three prizes in Buff, and Messrs. Cartwright, Stretch, and Miss Musgrove in Partridge.

In *Brahmas* Mr. Teebay's first-prize pen was characterised by the great size of the birds which it contained.

The Pencilled *Hamburghs* were very good, especially the Silvers. In Gold-spangled Mr. Worrall's prize pen was remarkable for the size and regularity of the moons. Of the Silver-spangles it is hardly necessary to speak. Lancashire Mooneys are always in full force in their native county.

The *Polish* consisted of two classes—Gold and Silver-spangled and other varieties. The Spangled classes were very strong, and contained birds that, by their size of crest and correctness of marking, reminded one of the birds that were exhibited some few years since. In the "Variety class" Col. Clowes was first with a very fine, well-crested pen of Whites, Mr. Dixon being second with Black.

The "other variety" class contained several pens of very good White Cochins, Sultans, and Silkies.

The *Game Bantam* class contained many very good pens, Mr. Turner being successful with a very small pen of Brown Reds. The Sebright class included both Gold and Silver-laced, Mr. Harvey Bayley taking the first prize with a thoroughly good pen of Gold, and Miss Everett the second with Silver.

The *Single Cock* classes contained some very good birds. Mr. Tudman's Partridge Cochins that won the Sweepstakes was a marvellously heavy bird, and was exhibited in first-rate condition.

The *Pigeon* classes were very well filled, and contained a surprising number of good birds, especially when the lateness of the season is continued. Mr. Eden's pair of Almonds were very good; the hen will be particularly fine after her next moult. Mr. Percival won the Tumbler prize with his well-known pair of Reds; Mr. Eden taking second with Black

Mottles, and winning the Carrier prize with a magnificent pair of Blacks. Mr. Parker's Red Jacks were very beautiful, in full hood and colour. Both the Barb prizes went to Mr. Eden for two pair of magnificent yellows. Much interest was excited as to the award of the Silver Cup given for the best pair of Turbets by Major Pedder. The competition was chiefly between two pens belonging to Mr. Townley Parker and Mr. Zeigler. The prize was awarded to a very beautiful pen of imported Reds, the Blues of Mr. Parker taking second. The class for the new varieties included many imported birds. One prize went to a very perfect pair of birds belonging to Mr. Goore; they resembled the birds lately shown as Shields, but were without turn crown or tuft. The other prizes were awarded to Frill-backs, and an imported pair of Silver Chequers.

The Show was equally successful with those of previous years. The Judges were Messrs. Challoner and Foulds for Game, Messrs. Fall and Tegetmeier for the general classes, and the latter gentleman for Pigeons. We subjoin the prize list.

GAME COCK (President's Cup).—Cup and Third, G. W. Moss, Aigburth, Liverpool. Second, W. A. Wright, Macclesfield. Fourth, C. Challoner, Worksop. Highly Commended, J. Fletcher, Stoneclough; T. Statler, Bury; T. Burgess, jun., Burley Dam; E. Lister, Cassia Lodge, Northwich; T. H. D. Bayley, Biggleswade; B. Vaughan; R. Swift, Southwell, Notts; J. Brown, Preston; R. Leigh, Preston. Commended, W. Rogers, Woodbridge, Suffolk; J. Fletcher, Stoneclough, Manchester; S. Birch, Blackpool; J. Hindson, Barton House, Everton; S. Mathew, Stowmarket; J. Brown, Preston. (A splendid assemblage of Game birds.) *Cockerel (Patron's Cup).*—Cup, E. Archer, Malvern. Second, T. Burgess, jun., Burley Dam. Third, W. and N. Grimshaw, Bank House, Pendle Forest. Highly Commended, G. W. Moss, Aigburth, Liverpool; E. Archer, Malvern; W. Cox, Braileford Hall, Derbyshire. Commended, J. Fletcher, Stoneclough, near Manchester; G. W. Moss; T. Procter, Settle, Yorkshire. (Quite an average class.)

GAME BANTAM COCK.—Cup, M. Turner, Preston. Second, Miss V. W. Musgrove, West Tower, Aughton. Third, T. Burnett, Hutton, near Preston. Highly Commended, H. Bates, Edgbaston, Birmingham; T. H. D. Bayley, Biggleswade; R. Swift, Southwell, Notts. Commended, Rev. J. Bowden, Thurgoland, Yorkshire; M. Turner, Preston; T. Burnett, Hutton, near Preston; R. Leigh, Preston. (A very superior collection.) *Hens.*—Cup, J. Fletcher, Stoneclough, Manchester. Second, W. and N. Grimshaw, Bank House, Pendle Forest. Third, E. Aykroyd, Darlington. Highly Commended, J. Fletcher, Stoneclough, Manchester; I. G. Park, Moresby, Cumberland; Parkinson & Lawrenson. Commended, G. W. Moss, Aigburth, Liverpool; D. Potter, Pendlebury, Manchester; W. Rogers, Woodbridge, Suffolk; J. Hull, Poulton-le-Fylde.

PENCILLED HAMBURG HENS.—Cup, Messrs. Carter & Valiant, Poulton-le-Fylde. Second, S. Shaw, Stainland, Halifax. Third, J. Munn, Stacksteads, Manchester. Highly Commended, T. Keable, Maddel Farm, Lambourne; J. Martin, Claines, Worcestershire. (Extraordinarily good class, all deserving prizes.)

GAME (Black and Brown Reds).—First, G. W. Moss, Aigburth, Liverpool. Second, E. Archer, Malvern. Third, J. Fletcher, Stoneclough, Manchester. Highly Commended, E. Swainson, Newton-in-Cartmel. Commended, J. S. Butler, Poulton-le-Fylde; H. P. Watson, Preston; C. Barwis, Preston; J. Woode, Haigh, near Wigan.

GAME (White and Piles).—First, G. W. Moss, Aigburth, Liverpool. Second, G. Haigh, Liphill Bank, Holmfirth. Third, H. Worrall, West Derby, Liverpool. Highly Commended, W. Newby, Levens, Westmoreland; Capt. W. W. Hornby, Knowsley Cottage.

GAME (Duckwings, Greys, and Blues).—First, W. Dawson, Selly Oak. Second, J. Brown, Preston. Third, G. W. Moss, Aigburth, Liverpool. Highly Commended, H. Worrall, West Derby, Liverpool; J. Hindson, Barton House, Everton.

GAME (any other variety).—First, J. Fletcher, Stoneclough, near Manchester (Black). Second, W. Dawson, Selly Oak. Third, G. Hellewell, Walkley, near Sheffield (Black). Highly Commended, T. Burgess, jun., Burley Dam, Cheshire.

GAME CHICKENS.—First, E. Archer, Malvern. Second, J. Brown, Stevenson Terrace, Preston. Third, W. and N. Grimshaw, Pendle Forest. Highly Commended, G. Clements, Newtown Row, Birmingham; G. Wycherley, Wrockwaine Road, Wellington; J. Fletcher, Stoneclough, Manchester. Commended, W. Winn, Lancaster Road, Preston.

SPANISH.—First and Second, R. Teebay, Fulwood, Preston. Third, J. R. Rodbard, Aldwick Court, Wrington, near Bristol. Highly Commended, J. Garlic, West Derby Road, Liverpool. Commended, G. Robinson, Gelder's Yard, Highgate, Kendal. (An extraordinarily good class.)

DORKINGS.—First, G. C. Whitwell, Kendal. Second, J. Robinson, Vale House, Garstang. Third, J. Robson, Linton Park, Kent.

COCHIN-CHINA (Cinnamon or Buff).—First, J. Cattell, Birmingham. Second, H. Tomlinson, Balsall Heath Road, Birmingham. Third, T. Stretch, Marsh Lane, Bootle. Commended, W. Dawson, Hopton, Mirfield.

COCHIN-CHINA (Brown and Partridge).—First, P. Cartwright, Oswestry. Second, T. Stretch, Marsh Lane, Bootle. Third, Miss V. W. Musgrove, Aughton, near Ormskirk.

BRABMA POOTRA.—First and Second, R. Teebay, Fulwood, Preston. Third, J. Fletcher, Alston, near Preston. Commended, R. Teebay.

HAMBURGH (Golden-pencilled).—First, Messrs. Carter & Valiant, Poulton-le-Fylde. Second, T. Robinson, the Gill, Ulverston. Third, J. Robinson, Vale House, Garstang. Highly Commended, J. Munn, Stacksteads, Manchester; T. Procter, Settle, Yorkshire; W. H. Dyson, Horton Bank Top. Commended, W. Holmes, Fleetwood.

HAMBURGH (Silver-pencilled).—First, D. Harding, Middlewich, Cheshire. Second, J. Martin, Claines, Worcestershire. Third, T. Keable, Maddel Farm, Lambourne. Highly Commended, J. Munn, Stacksteads, Manchester; D. Harding, Middlewich. Commended, W. H. Kerr, Elm Villa, Worcester; J. Dixon, North Park, Bradford; J. P. Jones, Handsworth, Sheffield. (A capital class, a decided improvement upon last year, almost every pen deserving a prize.)

HAMBURGH (Golden-spangled).—First, W. C. Worrall, Rice House, near

Liverpool. Second, R. Tate, Market Place, Driffeld. Third, S. H. Hyde, Taunton Hall, Ashton-under-Lyne. Highly Commended, W. C. Worrall, Rice House, near Liverpool.

HAMBURGH (Silver-spangled).—First, R. Teebay, Fulwood, Preston. Second, H. Beldon, Bradford, Yorkshire. Third, J. Fielding, Newchurch, Rossendale. Highly Commended, J. Robinson, Vale House, Garstang. Commended, J. Robinson; R. Teebay. (Really a superior class.)

POLAND (Gold and Silver).—First and Second, J. Dixon, North Park, Bradford. Third, G. C. Adkins, Lightwoods, Birmingham.

POLAND (any other variety).—First, Lieut.-Col. T. Clowes, Froxmer Court. Second, J. Dixon, Bradford.

ANY OTHER VARIETY.—First, W. Copple, Eccleston (White Cochins). Second and Third, W. Dawson, Hopton, Mirfield (Sultans and White Cochins). Highly Commended, J. Robson, Linton Park, Kent (Silkies). Commended, A. G. Brooke, Woodbridge, Suffolk (Malays); Mrs. W. A. Mocatta, Bispham, near Fleetwood (Malays).

BANTAMS (Game).—First, M. Turner, Preston. Second and Third, T. Burnett, Hutton, near Preston. Highly Commended, T. Burnett; J. R. Rodbard, Aldwick Court.

BANTAMS (Gold or Silver-laced).—First, T. H. D. Bayley, Biggleswade. Second, Miss G. Everett, Monmouth. Commended, J. Robson, Linton Park, Kent; E. Yeardley, Wisewood, near Sheffield; Miss L. A. Peters, Mosely, near Birmingham.

BANTAMS (any other variety).—First, E. Hutton, Garden House, Pudsey. Second, T. H. D. Bayley, Biggleswade. Highly Commended, W. C. Worrall, Knotty Ash, Liverpool; Miss L. A. Peters, Mosely, Birmingham; J. Cattell, Birmingham.

DUCKS (Aylesbury).—First, Mrs. M. Seamons, Hartwell, Bucks. Second, S. Barlow, Middleton, near Manchester. Highly Commended, C. Wright, Minshull, Cheshire; T. W. Hill, Heywood; Mrs. M. Seamons.

DUCKS (Rouen).—First, J. Tate, Preston. Second, S. Shaw, Stainland, Halifax. Highly Commended, Capt. W. W. Hornby, Knowsley Cottage; W. Copple, Eccleston; J. Tate.

DUCKS (Black, Call, or Common Grey).—First, J. Dixon, Bradford (Grey Call). Second, Miss S. Perkins, Sutton Coldfield (East India). Very Highly Commended, Major H. N. Pedder, Whinfield, Ashton (White Call).

SPANISH COCK.—Prize, R. Teebay, Fulwood, Preston.

DORKING COCK.—Prize, J. Robinson, Vale House, Garstang.

COCHIN-CHINA COCKS.—Prize, E. Tudman, Whitechurch, Salop.

HAMBURGH COCK (Pencilled).—First, W. C. Worrall, Knotty Ash, Liverpool. Second, W. H. Kerr, Elm Villa, Worcester.

HAMBURGH COCK (Spangled).—Prize, S. H. Hyde, Ashton-under-Lyne.

ANY OTHER VARIETY OF SINGLE COCK.—First, J. H. Craigie, Woodlands, Chigwell. Second, F. Hardy, Bowling Old Lane, Bradford.

DUCKS (any other variety).—Prize, Major H. N. Pedder, Ashton, Preston (Mandarin).

GEES.—Prize, F. A. Lavender, Biddenham.

TURKEYS.—No entry.

PIGEONS.—Almond Tumblers.—First, P. Eden, Cross Lane, Salford. Second, G. W. Hartley, Kendal. Commended, P. Eden; Major H. N. Pedder, Ashton, near Preston. *Tumblers (any other variety).*—First, J. Percival, Harborne, near Birmingham (Red). Second, P. Eden. Commended, H. Morris, Perry Vale, Forest Hill, Kent; G. W. Hartley, Kendal (Black Mottled and Black); Major Pedder, Whinfield, near Preston.

Carriers.—First and Second, P. Eden. Highly Commended, H. Morris, Perry Vale, Forest Hill. Commended, L. and C. Lay and, Warrington.

Pouters.—First and Second, P. Eden, Cross Lane, Salford. *Runts.*—First, C. Baker, the Pheasantry, Chelsea. Second, H. Child, jun., Birmingham.

Jacobins.—First, T. T. Parker, Charnock, near Chorley. Second, T. D. Walker, Liverpool. Highly Commended, H. Morris; S. Shaw, Stainland, near Halifax. *Fantails.*—First, F. Key, Beverley. Second, Major Pedder, Whinfield, near Preston. Highly Commended, H. Morris; S. Shaw.

Owls.—First, D. Thwaites, Rock Ferry, Cheshire. Second, H. Morris. Highly Commended, T. T. Parker. Commended, R. Chambers, Lune Street, Preston. *Trumpeters.*—First, F. Key. Second, S. Shaw. *Barbs.*—First and Second, P. Eden. Highly Commended, S. Shaw. Commended, H. Morris. *Turbits (Major Pedder's Cup).*—Cup, J. Zeigler, Edinburgh.

Second, T. T. Parker. Third, G. Goore, Aigburth Vale, near Liverpool. Commended, J. B. Pinder, Harpurhey, near Manchester. *Nuns.*—First, J. W. Edge, Aston New Town, Birmingham. Second, S. Shaw. *Drc-goons.*—First, G. F. Treadaway, Paddington, London. Second, D. Hardi g, Middlewich, Cheshire. Highly Commended, J. Brown, Stevenson Terrace, Preston. *Any other New or Distinct Variety.*—Prize, G. Goore, Aigburth Vale, Liverpool; J. Zeigler (Porcelains); F. A. Lavender, Biddenham (Frill-backs). Highly Commended, A. Cattley, York (Magpies); H. Morris, Perry Vale, Forest Hill; G. Goore; S. Shaw, Stainland, Halifax. Commended, Lady E. Talbot, Knowsley (Isabels); J. Zeigler, Edinburgh (Satinettes).

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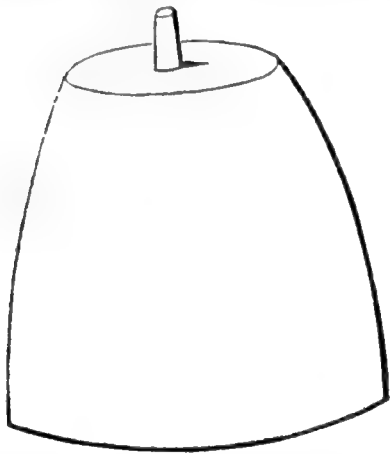
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PIE-JUICE AND HIVE-COVERS.

SOME years ago, I am told, a very learned, or would-be-learned, discussion took place in the gardening world on the best ways and means to keep the juice in the pie. One set of savans told how to put a cup under the crust, and another, equally learned, told how to put none at all. The cupites said, on raising the cup when the pie was to be eaten a great quantity of juice flowed out. "True," said the non-cupites, "but the juice would never have got in unless the pie cooled, and, therefore, the cup saves nothing—not only that, but does harm; because when the heat cooks the fruit it also expands the air that was in the inverted cup, and so fills the dish with wind, which said wind blows out the juice, and thus the cup loses, and not saves." "Never mind," replied cupite, "in my cup I always have juice, and you have none." The opponent sneered, and thus came a dreadful war, similar to the horrible Brobdignagians, and no Gulliver to deliver them.

Now, as the pie market will soon be looking up, without, as I am aware of, the juice point being settled, I will, with your per-

mission, learned Sir, come to the rescue. We will catch the juice, and no wind shall blow in the pie.



Look at this little cup. All that needs to be done is to see that the hole in the top be clear of the piecrust, by which means the hot air will rush out into the oven, and the juice takes its place. When the pie cools, down comes the juice, and disperses all among the fruit. The principle can be tried with a small flower-pot, in which case I would recommend that the hole be stopped by a cork, through which should be pushed a piece of tobacco-pipe, taking care that the pipe goes below and above the cork.

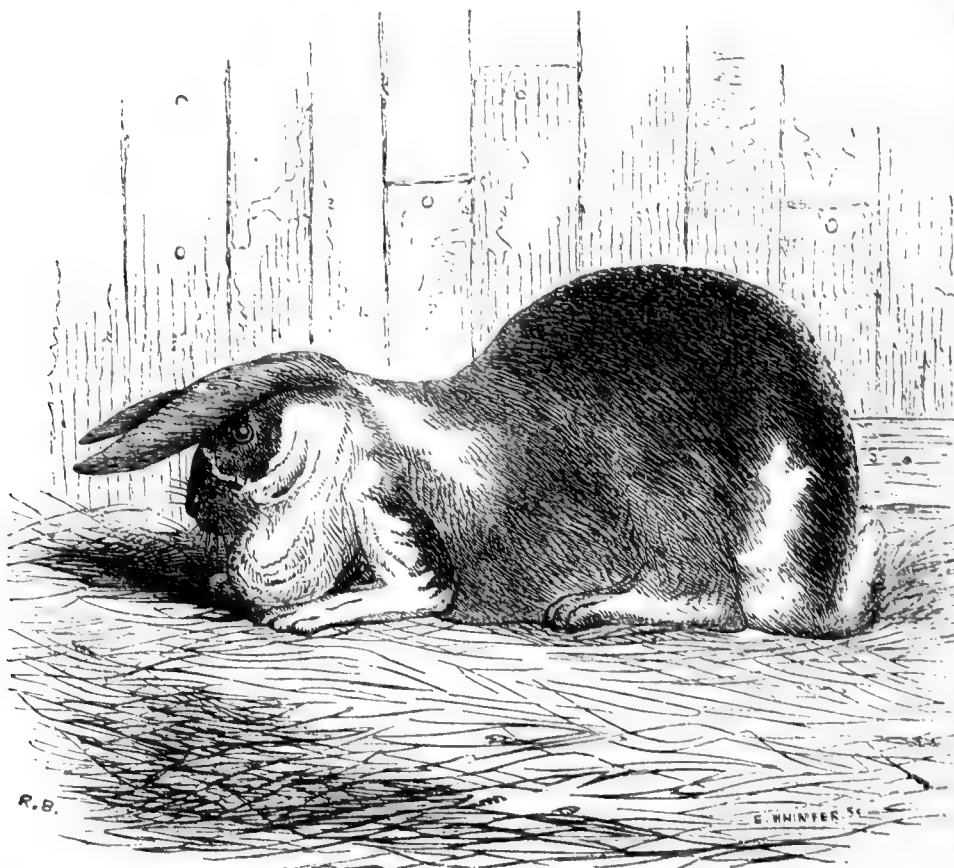
Now, having settled one sweet, I will pass on to the next—the bees. We had the blues again on those warm days when the snow was on the ground, but the rat-traps “cotched ‘un.” You have been on the milk-pan and hackle dispute, which, like the ancient quarrel, has much to be said on both sides for and against. The pans must get very hot in summer, and give a chill in winter. The hackles are ugly, and in the end cost more than the pans. Why not cover up with turves, as was mentioned last year? My hives are 14 inches in diameter inside, about 4 feet 2 inches round on the outside. I cut four turves about 1 foot 3 inches wide and 9 inches high; the bottom of each turf is 2 inches or more thick, and the mould is cut off, so as to slope to the top that it can bend and be laid flat on the top of the hive. The hive-board is square, and stands about 2 inches in the narrowest part beyond the outside of the hive; at each

corner I put a turf sod, and turn it down at the thin end on to the top of the hive. Thus are all the sides protected. Even the air between the sods and the hive is a good non-conductor of heat. Then for the top I cut a round turf that will come an inch beyond the sides, like a small eave to a cottage. This is bevelled off in the same manner, so that the crown or centre is much higher, and, consequently, when placed on the top of the hive the rain cannot rest on it, and, therefore, falls off immediately. These turves will last a year; but I change mine twice a-year. One thing bear in mind—the grass goes next to the hive, and the roots and mould are outside. Give the mould a pat with the spade so as to make it smooth, and you have a fine mud wall.

My hives were exposed all last summer with only turf for a shelter, and on looking at them a few days ago I found them as dry as tinder. They are covered thus all through the year, so they are never damp nor baked by the summer sun. Of course the turves are so cut that the hole for the entrance to the hive is quite clear. Nevertheless I could not make a honey year out of last summer, and when I weighed my bees in October they had not half a dozen pounds of food: so I gave them the bottle as you recommended, which they certainly took to like real drunkards. Then when the frost and snow came, off went the bottle, and in went the cork into the bottle's place. Still they were very light; so now I feed them, as Mr. Payne recommended, with barley-sugar. I shall not say how I made it, only just as he tells us at page 15 in your excellent little Manual; and if there be any of your readers who have not this little book they had better send six stamps to 162, Fleet Street, and get it at once. I thought the sugar might waste in the manufacture, but after many trials the same weight of sugar gives the same weight of barleysugar; and as this becomes moist on exposure to the air inside the hive I fancy a pound of sugar will thus give nearly a pound and a half of food.—X.

THE RABBIT (*LEPUS CUNICULUS*): ITS HISTORY, VARIETIES, AND MANAGEMENT.

(Continued from page 342.)



THE HORN-LOP.

THIS variety of the Lop-eared Rabbit derives its name from the position in which the ears are carried, drooping forward and a little downwards over the eyes, resembling the horns of a cow.

This Rabbit, like the Oar-lop, may be produced by the most highly-bred specimens of the Double-lop variety, and, by

judicious mating, may be the parent of first-class stock, if it is not the result of a cross with the common Rabbit, which in this variety is more often the case, and will show itself through many generations.

The Horn-lop is not so often to be met with, but is not to

be more valued on that account; for, on the other hand, it is more ungainly in appearance, and the ears are more difficult to get into a proper position—in fact, it is impossible to make perfect lops of Horn-lops either by capping or stitching.

Stitching is sometimes practised by fanciers—that is, the ear is placed in the required position and stitched to the side of the face and allowed to remain so for a week, when the stitch is drawn; but the cap is much the best.

In colour, form, and size, the Horn-lop resembles the other varieties of the Lop-eared Rabbit.—R. S. S.

(To be continued.)

FLOUR AS A SUBSTITUTE FOR POLLEN, ITS USE AND ABUSE.

I PERUSED the interesting articles in your columns last spring on the substituting of flour as an artificial food for bees. The idea was new to me; but from its feasibility I was induced to try the experiment, and found it much more practicable than I had anticipated. A few flat pans were provided, into which the flour was put, and placed at a distance of about twelve yards from the hives, in the locality where the bees in the spring are accustomed to come for water which is constantly supplied them when required: consequently they readily found their way to the pans containing the flour, and within an hour some of the stronger hives were as busy going in with their pollen as if the flowers had been all in blossom.

After various trials with various sorts of flour, it was discovered that they decidedly gave the preference to the finest pea-meal mixed with about one-third of fine flour, and sprinkled with a little water.

As the spring was somewhat advanced before the trial above mentioned was made, it was not necessary to continue it long, and it was discontinued as soon as a supply of farina could be got from the ordinary sources, but during the time which the bees were supplied with the flour they seemed to work with as much energy as at other times.

Being anxious to ascertain the use they specially made of it, I found on examination that they were applying it for the double purpose of ceiling up their young brood, and also storing it away as bee-bread, a fresh supply of which at this season of the year must be advantageous to the hives artificially fed with syrup.

Having thus stated what we consider the favourable view of supplying the bees with artificial pollen, it is but right to state that we believe that the supply should be limited, as, if they are supplied with it very liberally, in the end it will prove more injurious than beneficial.

In the experiment referred to above there were sixteen hives fed indiscriminately. One of the number, from the avidity with which the bees went to work, probably took in as much as any other six, and thus supplied themselves with a store beyond present consumption; and although it swarmed early and did well in the beginning of the summer, yet the result was, that the combs, although new, were overrun with an excess of mites, such as I have never observed in any other, and suppose this to be entirely attributable to an over-supply of the flour.—J. S.

BEEs BEGINNING TO COLLECT POLLEN.

YOUR correspondent, "A RENFREWSHIRE BEE-KEEPER," quite astonished me with the information that his bees were busy collecting pollen so early as February 3rd; his locality being two hundred miles north of mine, and there not being the least probability of mine commencing for some time to come, as the spring flowers are only just making their appearance.

The earliest date I ever knew them to commence carrying pollen in was the 25th of February, 1859—an early season; and this was from the willows, which will probably not be in flower for several weeks from this date (March 1st).

As respects the effects of frost, both your Devonshire correspondent and "A RENFREWSHIRE BEE-KEEPER" appear to have escaped much better than I, or others, in this locality; where the reply to my inquiry frequently is, "all dead," "only one left," &c., two or three hives living being a remarkable exception. In my own case I had the vexation of discovering four hives dead out of seven; two of those dead being very strong in the autumn, one of them not having swarmed last year. The cause of the mortality appears to have been the liquifying of the food,

(of which they had a considerable quantity), by the frost, as it appeared to have run down the combs in streams; and it is a remarkable circumstance that nine-tenths of the filled cells were not sealed, and the contents of a very dark filthy appearance, as unlike good honey as possible.—A NORTH-STAFFORDSHIRE BEE-KEEPER.

HACKLES, AVAUNT!

WHEN I read your Renfrewshire correspondent's phillippic, and his method of getting up the straw-hackles (page 296), like Robert Bloomfield on hearing of the translation of his "Farmer's Boy" into Latin, I was tempted to exclaim—

"Hey, Giles! in what new garb art dress'd?
For lads like you methinks a bold one;
I'm glad to see thee so caress'd;
But, hark ye! don't despise your old one.
Thou'rt not the first by many a boy
Who've found abroad good friends to own 'em;
Then, in such coats have shown their joy,
E'en their own fathers have not known 'em."

Notwithstanding my unlucky flash having drawn your Renfrewshire correspondent's "thunder plump" upon my venturesome head, I cannot forego the evidence of my senses; for, in almost every instance where I have come in contact with the "hackles of our ancestors," I have found them—through neglect, of course,—most abominable things; and it was from witnessing their repeated ill effects which led me to consider whether I could adapt a hive which would encourage me to recommend the discontinuance of coverings, which, nine times out of ten, their owners allow to become aged and filthy, and prejudicial to the bees. Your Renfrewshire correspondent has complained more than once, and severely condemned the blue Titmouse on account of the poor little fellow's attacks on his bees, and he informs us that he manufactures his hackles from "good oat sheaves." Now, Titmice, (*Parus major* and *P. cæruleus*) have certainly a weakness for insects and oats, and where would they more naturally expect to find them, or more eagerly search for them, than in good oat straw, and, in default, will feel no objection to the bee-sentinels which are on the *qui vive* to know what the tappings are all about?

No birds are destroyed on these premises. Their name is legion, and we have the species of Titmouse in numbers, which we consider our most useful and interesting feathered friends. I never saw them attack the bees, and it could not have escaped my notice if such had been the case; though I very much suspect, if the hives were enveloped in hackles, this latitude would be quite sufficiently north for me to complain of the breed if not of the mice also. We really appear here to live upon the edges of all the cycloids; it is a spot where a connoisseur of the winds might revel in continued observations, and fairly box the compass. If I felt ever so much inclined to use the hackles, I dare not do so. I should evidently arise some morning to find them blown either into the lake in Blenheim Park for the admiration of the swans, or into the streets of Woodstock, to the delectable satisfaction of the inhabitants. Even my "thunder plumps" I am obliged still further to secure by laying heavy pieces of old sculptured stone mouldings upon them.

Whatever compensative merits my bee-keeping may have over other systems, or whether I am right or wrong in what I am about to write in some following papers, it will be the result of my own management, not a grand climacteric or a learned disquisition. Whatever may be thought wrong by more experienced hands, I shall feel happy to have it pointed out, and to rectify it if possible. I well know that bee-keeping may be made to become as expensive an affair as keeping racehorses; but, simplicity of arrangement and construction are the objects I have sought and still seek to obtain, knowing that, in all improvements, the most perfect is that which is reduced to the simplest plan; and when it is found to be successful, the result is then fit for recommendation. Suffice it now to say, in answer to Mr. Fox, my bees are in perfect health and activity, and so are also those of two other persons in this town which are kept on my system, and who adopted the hives I recommended to them last year: the winter at present has had no ill effects on the stocks, and they have been merely sheltered with the milk-pans. I have been searching the villages round in order to send you a report of our bee disasters and prospects, and the result gleaned from eleven apiaries is as follows:—

No. 1*.—Ten stocks, common hives; one remains alive.

No. 2†.—Ten stocks; six alive, five weak; one strong on my plan with pan only.

Nos. 3 and 4.—A clergyman's and a tradesman's, all dead (informed of by No. 2).

No. 5†.—Ten stocks, all alive, but weakly.

No. 6.—Seven stocks, all dead before the winter; straw-hackleist.

No. 7*.—Ten stocks, all alive, but very weak.

No. 8*.—Seven stocks; three common hives dead, two ditto united stocks doing well; and two large hives on my plan, "exceedingly strong and pollen carrying."

No. 9*.—Seven stocks; five common hives dead, two on my plan "very strong and healthy."

No. 10.—Another hearsay, all dead.

No. 11*.—Four stocks (my own) on my alliance system, very strong and healthy.

Observed first young matured bee on the alighting-board February 7th. Tasted with my bee friend (Mr. Morris, No. 8) my last year's gooseberry champagne. "Very good—quite oily."

February 18, saw first pollen-carriers. Tasted Esperione wine, vintage of 1859. My friend pronounced it "excellent—quite a body in it."—UPWARDS AND ONWARDS.

MOISTURE IN HIVES—DISAPPEARANCE OF BLACK BEES IN LIGURIANISED STOCKS.

IN reply to "A RENFREWSHIRE BEE-KEEPER" I may state that the moisture which necessitated shifting my bees into dry boxes at the end of the season was confined to the interior of the hives, and was, therefore, wholly irrespective of external covering. The climate of this part of the country is (unfortunately for apiarians) extremely humid, and this I believe more than neutralises any advantage which might otherwise arise from the moderate range of the thermometer in this locality.

The black bees have entirely disappeared from two of my Ligurian stocks; and would, doubtless, have done so long before, but for my constant additions of black brood to make up for Ligurian brood-comb taken for queen-rearing and experimental purposes. These causes have kept most of my stocks in a mixed state up to this time; but having now but one black queen, I hope as summer advances to have from eight to ten pure Ligurian stocks, which I shall not require to alloy by any intermixture of the black species.—A DEVONSHIRE BEE-KEEPER.

BEE-KEEPING IN AMERICA.

SINCE writing the remarks on an article respecting autumnal bee-management in America, which appeared in the last COTTAGE GARDENER, I am indebted to the kindness of a friend for the perusal of Quinby's "Mysteries of Bee-keeping," one of the best transatlantic works on this subject, and one which throws light on some doubtful points in American bee-management.

PUNK.—I may mention in the first place that "punk" is explained as meaning "rotten wood," the smoke from which is strongly recommended by Mr. Langstroth, another eminent American apiarian as very efficacious in rendering bees less disposed to sting. Mr. Quinby says, "Any hard wood that has just sufficient strength to hold together is good; split or saw it into pieces $1\frac{1}{2}$ inch square, and dry it thoroughly; light one end—blow the smoke among the bees as occasion requires."

SIZE OF HIVES.—2000 cubic inches are recommended as the best size. British authority is not deferred to in this respect as appears from the following:—"Dr. Bevan, an English author, recommends a size 'eleven and three-eighths [query five-eighths?] inches square by nine deep in the clear,' making only about 1200 inches, and so few pounds necessary to winter the bees, that when I read it, I found myself wondering if the English inch and pound were the same as ours." Mr. Quinby also declares that shape "is not at all important. I have had some [hives] 10 inches square by 20 inches in length; they were awkward looking, but that was all, I could discover no difference in their prosperity."

BAR AND FRAME-HIVES.—This modification of the bar-hive has been patented in the United States by the Rev. L. L. Langstroth, and is highly recommended by Mr. Quinby in an appendix. All the advantages of bar-hives are enumerated as belonging exclusively to those having frames attached to the bars, whilst an objection is made to the original and more simple form, which certainly applies with at least equal force to bar

and frame-hives. It is not unlikely that the latter may be considered an American invention; but this would be a mistake, as they were first made use of in Germany, and I believe whatever credit may be due for their introduction should be attributed to Baron von Berleposch, of Seebach, in Thuringia.

SIZE OF BAR-HIVES.—Twelve inches are stated to be the proper width for a hive containing eight bars or frames. An inch and a half being declared to be "the right distance from centre to centre," another half inch might surely be added with advantage, as nine spaces are required between eight combs and the sides of the box; and this would give $12\frac{1}{2}$ inches as the best width for an eight-bar hive. Observation has long led me to consider $13\frac{1}{4}$ inches (some makers go so far as $13\frac{1}{2}$ inches or $13\frac{3}{4}$ inches), too wide for eight bars; and although I did not venture to start with a smaller diameter than 13 inches, yet, if I were now about to commence bee-keeping, I should prefer $12\frac{1}{2}$ inches for eight-bar stock-boxes.

FUMIGATION.—Fungus, and the fumigating-tube are recommended for effecting autumnal unions; and we learn that "Col. H. K. Oliver of Salem, Massachusetts, is said to be the inventor of the fumigator."

ENEMIES OF BEES.—THE WAX MOTH.—Among the real and supposed enemies of bees in the United (?) States are enumerated rats and mice, (which would certainly be dangerous to straw hives only raised 2 inches or 3 inches from the ground as recommended by our author), the King-bird, Cat-bird, Martins and Swallows, toads, wasps and hornets, ants, spiders, and last, but by no means the least, the Wax Moth, of which it is said, "If we combine into one phalanx all the depredators yet named, and compare their ability for mischief with the Wax Moth, we shall find their powers of destruction but a small item. Of the Moth itself we would have nothing to fear were it not for her progeny, that consist of a hundred or a thousand vile worms, whose food is principally wax or comb." "In July or August . . . a single Moth may enter the hive when exposed and deposit her whole burden of several hundred eggs. . . . The weather at this season will make any part of the hive warm enough to set her whole brood at work at once, and in three weeks all may be destroyed!"

HONEY-HARVEST.—During the honey season of 1856 it is stated that "the author, and a few neighbours who manage according to his system, furnished for market over 20,000 pounds of box [super] honey." With such honey-harvests, I am not surprised to find the price of honey so low as ten cents (fivepence) per pound.

WINTER MANAGEMENT.—It is recommended that bees be placed in a dark room during winter. Common hives are to be inverted, to allow exhalations to escape freely; but bar-hives may stand upright with the top boards removed. The bees are not confined to their respective hives, but are prevented by the darkness from going astray.

At the end of the book appears an advertisement respecting the "COTTAGE AND FARM BEE-KEEPER, a practical work, by a Country Curate." Is this at all interesting to our friend "B & W?"—A DEVONSHIRE BEE-KEEPER.

OUR LETTER BOX.

COCHIN-CHINA HEN WITH THROAT AFFECTED (*Ignoramus*).—Her gaping, twitching her neck, and other symptoms, show that she has the gapes. You cannot see the worms in her windpipe. Vapour of spirit of turpentine inhaled, sweet oil injected into the windpipe by a small syringe, have been recommended as remedies. Keeping up the tone of the bird's strength by generous but not fattening diet, and making the water it drinks chalybeate, is advisable treatment.

MANAGEMENT OF PEA FOWL (*A Subscriber*).—You must allow the Pea hen to choose her own locality for her nest; it is in the nature of these birds to wander. The young are very delicate at first, and require generous and stimulating food. Oat or barley meal with onion tops, pepper (black), and a little hempseed mixed with it is a capital dish for them, and one which they always appreciate. They require plenty of green food, and above all, clean and pure water.

BLACKS, A POULTRY DISEASE (*T. Hedley*).—We have before said (No. 644, page 264) that we do not know any disease so called. The "black rot" is confined to Spanish fowls, and is always deadly. Tell us the symptoms of "The Blacks."

WHITE DORKINGS—WHITE AYLESBURYS (*J. Bryan*).—The party you addressed has no longer any connection with this paper. You had better write to two or three parties whose names you see mentioned as prize-takers, or as commended at the poultry shows; tell them what you require and ask their prices. We recommend you to purchase the male from one breeder, and the female birds from another breeder.

PHEASANTS v. BANTAMS IN A GARDEN (*Rus in Urbe*).—Pheasants will not do as much damage in a flower garden as Bantams. They do not scratch at all; and, being more timid birds, their busking will be more at the back of shrubs and in hidden corners. They are fond of dusting and basking in the sun, but would not make any havoc in a garden.

* Milk-panists.

† Ditto with frousty pieces of cloth, &c., between the pans and the hives, than which nothing in my opinion can be worse, except the hackles.

WEEKLY CALENDAR.

| Day of M th | Day of Week. | MARCH 19—25, 1861. | WEATHER NEAR LONDON IN 1860. | | | | Sun Rises. | | Sun Sets. | | Moon Rises and Sets | Moon's Age. | Clock before Sun. | Day of Year. |
|------------------------|--------------|-------------------------|------------------------------|-----------|-------|-----------------|------------|------|-----------|------|---------------------|-------------|-------------------|--------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | | | |
| 19 | Tu | Cyclamens. | 29.972—29.962 | deg. d.g. | | | m. | h. | m. | h. | m. | h. | m. | s. |
| 20 | W | Erythronium. | 30.121—30.109 | 55—33 | W. | ·01 | 7 | af 6 | 9 | af 6 | 58 | 1 | 7 | 53 |
| 21 | Th | Sun's declin. 0° 21' N. | 29.967—29.726 | 53—30 | S.W. | — | 5 | 6 | 11 | 6 | 45 | 2 | 7 | 35 |
| 22 | F | Fumaria. | 29.554—29.367 | 52—41 | S.W. | ·01 | 2 | 6 | 12 | 6 | 23 | 3 | 10 | 7 |
| 23 | S | Ixia. | 29.823—29.712 | 51—23 | S.W. | ·04 | 0 | 6 | 14 | 6 | 52 | 3 | 11 | 6 |
| 24 | SUN | PALM SUNDAY. | 29.020—28.949 | 50—31 | N.W. | ·03 | 55 | 5 | 16 | 6 | 16 | 4 | 12 | 6 |
| 25 | M | LADY DAY. | 29.487—29.147 | 49—35 | S.W. | ·03 | 53 | 5 | 17 | 6 | 37 | 4 | 13 | 6 |
| | | | | 50—34 | N.W. | — | | | 19 | 6 | 56 | 4 | 14 | 6 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 50.8° and 33.7° respectively. The greatest heat, 69°, occurred on the 24th, in 1858; and the lowest cold, 16°, on the 20th in 1845. During the period 152 days were fine, and on 86 ra'n fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

Capsicums, pot off the young plants as soon as they are fit, and place them in a hotbed-frame. They are very subject to the green fly which should be destroyed immediately it is observed. *Carrots*, the weather is now favourable for getting in the main crops. *Celery*, prick out the early sown into boxes or on a slight hotbed. When they have taken fresh root-hold give them air at every favourable opportunity. *Cucumbers*, as soon as the frames are uncovered in the morning, give a little air for an hour to let the stagnant air pass off, when they may be closed again until the day is further advanced. As soon as the principal shoots have reached the sides of the frame, never allow any of the laterals to grow more than two joints before being stopped. *Jerusalem Artichokes*, if not yet planted no time should be lost in getting them in. *Kidney Beans*, make another sowing in pots; keep the bearing plants frequently syringed to keep down red spider. *Lettuce*, some of the best plants that have been wintered in frames may now be put out, some under a south wall, and others in a more open situation. *Onions*, sow the main crops. If large ones are required, plant the very small bulbs of last year, or the autumn-sown plants, in very rich ground, or the largest may be got by treading the ground well and laying 3 inches of very rotten dung upon it, on this sow the seed of the Madeira variety, and cover with a little fine earth. *Peas*, stick the early crops as soon as they are earthed up. *Purslane*, make a sowing on a warm border. *Radishes*, sow for successional crops. The Turnip-rooted sort may now be sown. *Rhubarb*, may now be forwarded by placing a hand-glass over the roots, with a little litter around the bottom to prevent the ingress of cold winds. *Savoy*, make a good sowing of the Dwarf Green. *Salsafy*, sow, as also *Scorzonera*, in drills from 9 inches to 1 foot apart.

FLOWER GARDEN.

As many of the *Asters*, *Phloxes*, *Veronicas*, and other such strong-growing herbaceous plants throw up too many flower-shoots, where such is the case it is advisable to thin them out at once, not only to obtain fine heads of bloom, but also to increase the strength of the remaining shoots, when they will require less assistance from sticks. The Hybrid, China, Perpetual, and other *Roses* to be pruned and top-dressed with rotten dung. Sow hardy annuals in patches, a slight covering for the seed will be sufficient. Mark the places with small sticks, or make a small ring which will prevent any other things being planted over them.

FRUIT GARDEN.

Attend carefully to the protection of the opening blossoms of fruit trees. Straw or hay ropes, as previously recommended, are excellent protectors. Yew or spruce branches are also of service, being careful that they are so fixed as not to be liable to be blown against the blossom.

STOVE.

Shake out and repot the plants that had been cut back, No. 651.—Vol. XXV. No. 25.

as previously advised, and encourage a free growth by syringings, &c. Attend to regular shifting, watering, and a free and healthy circulation of air in the morning—air without draught. Follow up the shifting of *Orchids* and top dressing in general, syringing freely those on blocks and baskets; to be done early on sunny mornings, giving extra air with a little fire heat on such occasions to dissipate any excess of moisture.

GREENHOUSE AND CONSERVATORY.

The training of the creepers in the conservatory to be carefully attended to, and do not allow the plants that are turned out permanently into the borders to suffer for want of water. Shift when necessary *Australian* and *Cape* plants in a growing state, as also *Pelargoniums*, *Calceolarias*, and *Cinerarias*, to make fine specimens. Clean away dead flowers from *Heaths*, and cut back those that are in a healthy condition before they make their season's growth. Attention to be given to the stopping of vigorous shoots to produce handsome specimens. *Pelargoniums* to be neatly trained in due time, and to be kept clear of the green fly by Neal's Pastils. Air to be given at all favourable opportunities, which is easily distinguished by the difference between a cold north, or north-east, and a south or south-west soft, mild wind. When the *Camellias* have done blooming examine the roots and give the plants a shift if they require it, using equal parts of turfy loam and peat with a sprinkling of sand, to be kept close and liberally supplied with moisture, root and branches, until they have set their flower-buds, when they may be gradually hardened off by the admission of air.

FORCING-PIT.

This will now be a suitable place for encouraging the stock of various stove plants, such as *Ardiasias*, *Clerodendrons*, *Echites*, *Gardenias*, *Gesneras*, *Gloxinias*, *Ixoras*, *Brunfelsias*, *Poinsettias*, *Thunbergias*, &c.; the whole of them delight in a humid atmosphere with gentle bottom heat, and an occasional application of clear, diluted manure water.

PITS AND FRAMES.

Put in cuttings of everything that is likely to be wanted for spring planting. A mild frame heat is most suitable for striking them in. Pot off struck cuttings as fast as room can be made, by removing the more hardy kinds to colder situations, to harden off for the first planting. Pot off Ten-week and other Stocks as soon as they are ready.

W. KEANE.

DOINGS OF THE LAST WEEK.

SWEPT driven leaves from lawn, rolled ditto. Swept and rolled walks, as if, with the slightest fall to the sides, they are kept well rolled and firm, the wet does not enter, and, therefore, neither heavy rains nor severe frosts have much effect upon them. A smooth, firm, dry walk in winter may always be looked upon in the light of a luxury; and though stone and asphalt, and various modifications of tar and gravel, will be much cheaper ultimately than good gravel, none of them are so pleasant and

agreeable to the feet as nice-kept gravel. Pruned Laurels and other shrubs, and thinned where getting too thick, even though good plants have to be removed; as it is better to have one very nice plant with room to extend itself freely, than two plants injuring and spoiling each other.

In the kitchen garden turned over ground previously ridged up, that it may be more perfectly sweetened and dried for planting and seed-sowing. Owing to the continued rains on heavy ground, found that some seeds, as Peas and Beans, were rotting in the ground, owing to the surface getting so caked as to keep out a sufficiency of air; broke the surface slightly with the prongs of a fork, and sowed some boxes under glass to furnish plants to fill up with if necessary. In stiff, cold soils, and in such seasons as this, it would be advisable to sow under glass for a row or two of the best Marrow Peas, such as Veitch's Perfection, Ne Plus Ultra, &c. They will come all the sooner in consequence, and will escape being injured in the soil by the small black yellow-bellied slugs, that even after this winter are more than usually numerous, and which nothing but trapping and picking seems sufficient to kill. Finished root-pruning some Pears and Apples which had better been done at the end of October, but which will answer the purpose well enough, putting a little fresh soil firmly round the roots, and mulching the surface with a little rotten dung. I find that Peach trees are not only much injured, but that where exposed almost every fruit-bud has shrivelled and dropped. Apricots nearly as bad. On a small piece of wall covered with old sashes, the buds of the Peaches and the wood are sound and right enough; showing what even a little protection, if comparative dryness is secured, will do.

In the greenhouse and pits more water has been wanted in the sunny days, as want of water will cause *Azaleas* and *Camellias* to drop their buds; and in the case of soft-wooded plants, the leaves will not only be apt to suffer, but the least languor thus produced gives a nice opportunity for the attacks of insects. Want of water in sunny days is just as injurious as having the soil in pots saturated with water in cold, dull weather. Even when the leaves show a little sign of flagging in sunny days do not water unless you satisfy yourself that the soil is dry. Often in sudden extremes from cloud to sun, that distressed appearance will manifest itself when the soil is moist enough. Watering under such circumstances will not lessen the evil, and if dull days follow, the extra moisture, if there is the slightest defect in drainage, will induce a plethoric, gouty habit. Under such circumstances a slight shading and a gentle sprinkling of the plants with the syringe, and damping the shelves and stages of the house, will be the best remedy. Avoid, however, damping under such circumstances the leaves of florists' Pelargoniums. These leaves should always be dry before the sun shines upon them.

Turned out a quantity of young Brilliant Geraniums, &c., that had been potted separately in 60-pots in a bed of rich soil, chiefly leaf mould, in an earth pit, to be covered for a short time with spare sashes, placing the plants from 3 inches to 4 inches apart. Moved a quantity of *Calceolarias* from a cold pit where they were struck as thick as they could stand into an earth-pit border. This pit was much soaked. About a couple of inches of the top soil were removed, and mixed with about 3 inches of hot half rotten leaves, followed directly with 2½ inches of sandy loam and rotten leaf mould. This gave a nice genial soil at once to start in, and here the *Calceolarias* were planted out about 3 inches apart, to give them room to be stiff plants before May. If very strong and likely to injure themselves, they will be thinned again. These always do far better than when coddled in pots. These will have glass for a few days, and be succeeded with straw hurdles, and then hurdles of branches thick enough to keep out some cold, and thin enough to let the sun through. Kept taking off cuttings as they could be got, placing them in a mild bottom heat, and from a foot to 18 inches from the glass, so as to avoid the necessity of shading.

The friend who inquired about *Cineraria maritima* will, if the plants were cut down, be now in a position to propagate wholesale. The tops of the plant require time and care to propagate. When cut down almost close to the ground a great many shoots will come from the stem, and chiefly in the way of suckers. These are firm, and almost free from the soft woolly nature of the top shoots; and if taken off when about 2 inches long, and cut across at the bottom, and inserted in sand soil, and placed in a sweet bottom heat, will generally be rooted in about ten days, and these for edgings make far better plants

than older or larger ones. We have had some fine massive edgings by leaving the plants out all winter, and cutting them down to the ground in spring, and giving these young shoots a thinning after they pushed. The plant is quite hardy, or at least as hardy as a Laurel. We generally take some up, but we neglected to do so this season, and feared we should be done for; but when the severe frost was over we lifted a lot and put them thickly into large pots, and, after a few days in a cold pit, placed them in a frame plunged in tree leaves having a little heat; and though some have gone, the greater proportion have pushed from the crown of the roots and are now furnishing us with cuttings, though not in such quantity as they might have done if kept in a cold pit in winter. We took our cuttings last year from plants that stood out all the winter; and though, therefore, we did not get them until April, they were quite in time enough for being planted out in the middle of May.

The ground being still so wet, sowed some Turnip and Onions under protection, also Radishes. Dwarf Kidney Beans in boxes to be transplanted. After this they will do very well in a frame, with a bottom heat of from 60° to 70°, and a top heat of from 50° to 55°, and a rise from sunshine. It is better to grow them thus than in houses shaded by things above them; the higher temperature they receive there and the shade together render them from weakness liable to be attacked by all sorts of insects, which will find their way to other things beside the Beans. We hardly ever have an insect on them when grown in pits or frames. One thing—the syringe can be more freely used. If grown in pots, larger pots may now be used, and much richer compost. In dull weather in winter we prefer smaller pots and lighter compost. Removed Strawberries finished fruiting, introduced more from mild frame heat, and watered with manure water those showing and swelling. Regulated Vines, potted Geraniums and Fuchsias, and stirred the soil in which Cucumbers are planted, watering that soil only to the extent that we judge the roots have gone; and picked out the tubers and fresh potted Achimenes, using light sandy loam enriched with a little peat, leaf mould, and old dried cowdung, &c.—R. F.

MULBERRY TREE AGAINST A WALL.

IN the winter of 1854 I planted a Mulberry tree on a south aspect against a wall 7 feet high. It now covers nearly the space I can allow it—viz., 12 feet in length and 7 feet high, and last year produced a few berries, and shoots of from 12 inches to 20 inches long. How and when should it be pruned? Would root-pruning be of use, to reduce the strength of the shoots, and bring it into a bearing state? and at what season should it be done?—OVERDESSEL.

[We should root-prune directly, trying to get at a tap root; then we should cut out some main branches altogether, and lay in the young shoots nearly their full length reversed—that is, trained back towards the stem; and then, though that may not give more fruit this season, you will be likely to have plenty on short spurs in 1862.]

ARRANGEMENT OF CROCUSES.

SAXIFRAGA OPPOSITIFOLIA—AGATHÆA CŒLESTIS—ARABIS VARIEGATA.

THE Crocuses in my private garden, and in the Experimental Garden at this moment, could not possibly, I should think, be excelled anywhere for effect; and they are all in rows—not as beds, but in broad bands, round beds, and along the sides of straight walks and curved walks.

Five years back the way these Crocuses were planted, how the colours were arranged, and the names of the kinds were published in THE COTTAGE GARDENER. The bulbs were planted singly at 4 inches apart, and now the rows are full, and average 9 inches across the mass of flowers. But double rows are put round some of the beds at the Experimental facing the drawing-room. In some beds an early and a late kind of Crocus are in separate rows, or rings, to lengthen the season; in some two kinds to bloom in contrast, and purple and yellow, white and purple; and some for combination, as light lilac, streaked lilac, on a white ground, as Sir Walter Scott, and pure white, and, to my eye, this is the most

telling of all—that is, three flowers, or three rows, or the three going on in a regular succession, without a break, from end to end, in one long row to make one colour—a light lilac edging, which, when the March sun is upon it, is most charming to the eye. Now, a row of Crocuses of different kinds will look well if the distinct colours stand at regular distances, as yellow at 30 inches or 40 inches apart in the row; blues or purples at 20 inches, or 30 inches, or 40 inches; and the pure whites the same. All the rest of our spring Crocuses are merely variations of these three colours; and any one might finish planting a row on this wise, if the standard kinds were thus once disposed of. And as the whole month of March is the best time in the whole year to arrange the shades of colour to one's own fancy, because the flowers are then open, I would strongly advise you to take an early opportunity of digging up every Crocus "root" from round your borders, and have them planted in close continuous rows, putting the colours exactly as you like them. To see such arrangements as I am accustomed to, and then to see others with no arrangement at all, but in patches, great, small, and singly, or mixed in all the odd ways which chances and accidents throw together, is enough to make one ashamed of one's calling, and wish that no foreigners may see our spring flowers to jeer and jibe at, as they well may.

Some people think you cannot move a Crocus, or a Snowdrop, or a Daffydownilly after it is once above ground till next autumn; but there never was a greater mistake in this world. Why, I have moved them my own self almost every year since the last wet season before 1860, which was in 1816, long before I knew anything of gardening, and ever since; and I could never see the least harm from shifting all spring bulbs from place to place, from the first day to this hour. And I would no more refrain from altering a walk, or border, or line, or outline, for the sake of a thousand bulbs just coming up to the surface, or in full flower, up to the very last week in April, than I would allow my Crocuses and other spring bulbs to litter about the borders anyhow, as some people do, and yet pretend to be fond of a garden.

But as the best people go first, and they only take good advice, I suppose many of those who noted down the way our Crocuses were done at the beginning are now gone, and others may be as good and as easily persuaded to do that which we know is desirable. I had better say our sorts and our arrangement. Four sorts made the groundwork of our Crocuses: the large Dutch Yellow; Prince Albert, a light purple; Queen Victoria, pure white; and Sir Walter Scott, white and lilac. The effect from four hundred kinds of Crocuses in the same space of ground could, in no arrangement, be greater than the effect which could be made with these four kinds when properly disposed. But where so many good kinds of Crocuses are to be had, and so cheap, too, as to be hardly worth mentioning, I would have as many of the decidedly good kinds as possible, if only for the sake of variety in my pot Crocuses for in-doors; for the poorest man in the parish may have pot Crocuses just as good as a Lord Mayor, if he only takes the trouble to pot them in balls from the borders just as the flower-buds are seen, or on to the day they first open.

The arrangement is this: White, yellow, white, purple white, yellow, white and purple, and so on from end to end, making Sir Walter Scott equal to the Queen though striped with lilac. The arrangement is more simple by saying every yellow Crocus had a white or light colour on each side of it, and the purples the same as the yellow ones. All the pure whites or Queen stood thus at equal distances along the whole line, all the purples the same, and so with every yellow, and with every Sir Walter Scott.

Now, from a beautiful collection of pot Crocuses which were exhibited before the Floricultural Committee on the 12th inst., by Mr. William Paul, of the Cheshunt Nur-

series, I made a selection exactly on the model of the first one. I took the best white, the best yellow, the best purple, and the best white-and-lilac-striped, and I found a better kind—say twice as good as Sir Walter Scott, and another superior to it, in the same; also, three as good and one richer than Prince Albert, and one a great deal stronger than the Queen. Being very earnest on the subject, and just as fond of the Crocus when well done as I am of alpine and border Auriculas, I begged a cut bloom of each of the kinds; and having them now before me at my leisure, and a row of thirty yards down straight from my window, I am sure I am not far from the mark I wish to hit; and were it not that I have too many irons in the fire, I would order a potful of each kind of these Crocuses this very day. All the nurserymen have them in pots, and can pot them from their beds on purpose to travel any distance in the three kingdoms, so that no one need fear of being well served and with the right sorts, which may be compared with this account of them.

Mammoth, the best white and strongest grower. *Majesteuse*, the largest flower of the Sir Walter Scott race, and twice as much lilac in it as is in Sir Walter. Mr. Paul's flower is just double the size of my Sir Walter Scott, and mine are none of the smallest. *Marie d'Ecosse* (Mary Queen of Scots?), this is the handsomest Crocus in the world to my eye. It is in the way of Sir Walter Scott, and about the same size; but it is so regularly pencilled and feathered all over with deep lilac on a white ground as to excel all the notions of mauve in ladies' dresses this time two years back, or rather the summer dresses of 1859, and some of them were exquisite, but never a one near London so truly blended in tints as this most lovely flower. *David Rizzio*, a darker shade of purple than Prince Albert. *La Plus Belle*, just the same as my Prince Albert, a light purple; and *Sir John Franklin*, a large, really good purple. The best yellow was the old Dutch Yellow, the best of all yellow Crocuses for the middle season, not mentioning February or April yellows.

There was another fine spring flower at this meeting which one seldom sees now-a-days—the old *Saxifraga oppositifolia*, which has much of the looks of Lemon Thyme, and grows very much in the fashion of the common Stonecrop, *Sedum acre*; but where the light sandy soil suits it, that *Sedum* is a fool to it for spreading about, for running over the sides of flower-boxes outside the window, and for belting round beds of Crocuses, just as close and as full of blossoms as a belt of *Saponaria calabrica* that was transplanted three times before it came into bloom. Well, Mr. Rawbone, gardener at Bartoston Hall, Staffordshire, not very far from Trentham, sent a boxful of this elegant alpine to our meeting. It was a full yard long or more, and over 30 inches across, all as close as any patch of Lemon Thyme you ever saw, and in one mass of bloom all over—not the crimson little blossom of the original species, but the rosy lilac of the more recent variety, with finer growth and much larger blossoms. I think the box was handsomely presented to the Society, and went under Mr. Eyles' wing to Chiswick; and if so, we shall see it in the figure patterns of the new Garden, and it will pay well to have it propagated for the ballot distribution. It is just as good as if it was discovered only last week on the top of Parnassus or Mount Ida, for not one out of ten thousand who have a garden has ever yet seen the plant at all, or even knows that it is just as hardy as the Scotch Crocus, and nearly as early to come in bloom, also that it is a native. But, by-the-by, can any British botanist tell if this "improved" kind is met with anywhere in a wild state?

Another bedding plant about which the whole of the Committee were unanimous in giving it a handsome prize, was sent by Mr. Bull, nurseryman, Chelsea. It is not often that from fifteen to twenty of us do agree in the Floral Committee about the value of a new plant.

We represent so many varieties of tastes, that anything we recommend must be of the character of "what everybody says," and "what everybody says must be true." Well, I allude to a very bright variegated plant from a very old bedder, the Blue African Daisy, alias *Cineraria amelloides*, but the lawful name is *Agathea* or *Agathæa celestis*, and the name of the new variegated edging is *Agathæa celestis foliis variegatis*; but, of course, Mr. Bull would sell it by the more common name—Variegated *Cineraria amelloides*, and no doubt it will soon be in the hands of every nurseryman in the three kingdoms who deals in bedding plants, and in assortments for ribbons and shaded-wool-fancy plant-borders.

For those who may not know the Blue African Daisy itself, it may be right to say, that it is a low spreading plant, more easy to strike than a *Verbena*, and just as good to keep over the winter as any one of the *Fuchsias*. It was shown last season at the Regent's Park in full bloom, and will, probably, bloom as freely as the parent plant—that is, from May to October. But it is from the habit and from the whiteness of the variegation that it will become everybody's plant, and it was from these characters that we were unanimous in our verdict in its favour.

ARABIS VARIEGATA.—I have traced this plant to its origin at last. I had conversations with two thoroughly good British botanists respecting it. One of them has specimens of all the family from all the places where the plants have been found growing wild. Both assured me there is no natural difference between *Arabis alpina præcox*, and *alba*; but that a larger-flowering variety of it was on sale about London twenty years back called *Arabis grandiflora*; and both say *præcox* ought certainly to be the best name to retain as being the truest—that is to say, the earliest *Arabis* to bloom in the spring, that most of the genus are alpine plants, and that to call one alpine in preference to another is like the old name *fragrans* given to, perhaps, the least fragrant plant of a family. Then as to *alba*, which is a published specific name for a particular form or plant of *alpina*, it is more untenable than *alpina*, as all those alpine plants have white flowers. It seems to me, therefore, in a popular and very practical work like *THE COTTAGE GARDENER*, that we should not puzzle our brains with all this hair-splitting of botanists, but go at it like sober men of business, and in this instance to hold to the variegated *Arabis* as we do to the variegated *Alyssum* and variegated *Mint*—without the specific name at all. The variegated *amelloides* would be the best practical name for Mr. Bull's new treasure. When a young gardener has to come out with three or four Latin names before a lady for a common-looking plant, he is set down for a coxcomb without a prize or a prince's feather for his bonnet, as, perhaps, he had expected for his learning. The tomfooleries of changing so many names, and of multiplying crackjawed jargon for no earthly end than sheer pedantry, has done a world of harm to gardening and gardeners among the ladies. Another thing which does almost as much harm the other way is the excess of names in all garden catalogues, which puzzle ten times more than they teach.

Another subject which attracted the liveliest interest in our Committee was a collection of twenty varieties of *Yew*, contributed by Mr. William Paul, of the Cheshunt Nurseries, and a paper which he read to us on the ways they might best be planted for effect. He divided them into four groups—the spreading *Yews*, as the common *Yew*; the upright ones, as the Irish *Yew*; the weeping ones, as the half spreading, half weeping *Dovastoni*; and the variegated *Yews*, as *foliis aureis* and *elegantissimus*. The most beautiful of these for terrace gardens is an upright kind called *Cheshuntensis*, and is as different from the Irish and other *Yews* as an *Epacris* is from a *Heath*—a free grower, and as upright as *stricta* or *erecta*, or any of that class as Mr. Crowder, of Horncastle's,

new *Yew*, but different from it and a seedling from the Irish *Yew*.

When *THE COTTAGE GARDENER* is enlarged, I hope the Editors will find room to give extracts from the reports of such interesting subjects from the "Proceedings" of both the Fruit and Floral Committees; for they are of great practical value, and it would only be helping the endeavours of the Society to give such reports the advantage of our circulation, just as the nurserymen are now doing who send collections of gay flowers merely to be looked at by visitors, and so help on the good work in which we are all engaged. The more these things are done before the great patrons of gardening, the more enjoyment, the more trade, and the more work for gardeners.

The Society's garden and the Wellington Road Nursery, with some more minor contributions, made up the bulk of this gathering at the Floral Committee; and when the whole were arranged from both Committees, fruits and flowers, the sight was well worth seeing.

The *Cyclamens* from the Wellington Nursery were very gay: the little *Iris reticulata* in the same collection was very sweet and coming so early, and before the dwarf Crimean sorts very desirable. In the same collection were three fine plants of *Imatophyllum miniatum* in full bloom, one of them having seventeen flowers in one truss; also the lively *Rhododendron jasminiflorum*; also *Musenda frondosa*, *Clerodendron viscosum*—a white fragrant flower, with *Cosmelia rubra* and others of less note.

Mr. Davis, from near Bristol, sent a beautiful cross *Rhododendron* between the *Sikkim fimbriata* and the old *sempervirens*—the earliest of the race, both hardy parents; the offspring a light rosy or lilacy flower of the same shape as that of *ciliatum*, but reduced in size by the pollen parent. This *Rhododendron* can be had for the conservatory without forcing in February, and, being everybody's plant, is far more valuable to the community than the later kinds that induced us to give it a handsome lift with a prize.

There are three kinds of flowers on which we bestow our favours ungrudgingly on three different grounds. Any flower, no matter how common it looks, if it is likely to be of universal use—as this *Rhododendron*, that variegated *amelloides*, and the old forgotten *Saxifraga oppositifolia*. The next is anything really good out of the common run, and which country cousins would call an extraordinary cross or new comer from abroad; and the third any good improvement on a real florist's fancy. This is the first time and opportunity in the history of the Horticultural Society for having the assistance of real practical florists, and we mean to profit by it in earnest. Botany, and bands, and Rose-edgings, with the profundity of the rotundity in form and shape, could never hitherto have amalgamated their "orders" and "points;" nor could they now were it not for this new terrace garden, which is to revive the best feelings of both parties on the same level by the rule and compasses. We hope to prove thus that town gardens, and gardens of limited extent, are not only much more attractive when made on the terrace model, but also more likely to bring the crooked heads and wavy notions, the cross-grained logs, the round stumps of ancient trees and green saplings, out of the category of ruins and clashing contrast, and unite them all in one whole, even as the sward, and varied as its surface and its inclinations.

D. BEATON.

FRAGRANCE OF CAMELLIA TRICOLOR.

A SHORT time ago I was standing in company with *Camellias imbricata alba*, Lady Hume's *Blush*, and the Countess of Ellesmere. We were all in bloom, when one morning the servant that waits upon us made a sudden pause and addressed us thus:—"You are beautiful, and if you possessed fragrance also, I should

consider you to be the royal family of greenhouse shrubs." Then he placed his olfactory organ very near to our pretty faces. From the three first named he could not inhale perfume; then turning to me with a look of despair, anon he exclaimed, Oh, delicious! He had seen us in bloom many times, and only just now made the discovery that we, *Camellia tricolors*, possess fragrance as well as beauty. For a moment he thought it might be a freak of mine, and as I had an elder sister in the same house in beautiful bloom, he stepped up to her to ascertain the truth of my disclosure, and soon satisfied himself that our every bloom possesses the same delicate fragrance. Fearing this is not generally known amongst our friends, I take the liberty to ask if you, Sir, will kindly publish it, trusting it will be the means of increasing the numbers of our family and admirers.—*CAMELLIA TRICOLOR*.

NICE, ITS CLIMATE AND PLANTS.

No. 2.

NICE, MARCH 4, 1861.—In the expressive language of Scripture it may now be truly said of this place, "The winter is past, the rain is over and gone, the flowers appear on the earth, the time of the singing of birds is come, and the voice of the turtle is heard in the land." The weather is magnificent—almost a cloudless sky. The thermometer in the sun generally above 100°; whilst in the shade it is deliciously cool, ranging in the daytime between 55° and 62°, the night temperature being from 45° to 50°, so that it is just warm enough within doors to render fires unnecessary. Violets are in great profusion both cultivated and wild. In the neighbourhood of Villa Franca the air is literally perfumed with them, great numbers of the Double Palermo variety being grown for scent-distillation. Children meet the visitor almost everywhere with them for sale at a halfpenny (sous), per bunch.

Since I last wrote new varieties of the wild Anemones have made their appearance in the surrounding country; amongst which the double scarlet (*Regina duplex*), semi-double pink (*A. stellata*), single scarlet with yellow band inside (*A. pavonia*), are especially deserving of notice. The wild flowers now also include Tulips, large red (*T. oculus solis*), and a smaller kind with sharp-pointed petals, white with carmine red (*T. Clusiana*), Primroses, Hyacinths (*H. orientalis*), both blue and white, Narcissus of many sorts, particularly the fine milk-white (*N. polyanthus*), and the *N. Tazetta*, which is perhaps the most common—white with orange nectary in the centre. On the hills the yellow *Coronilla* is very showy; and also the purple Stocks (*Mathiola annua*), and bright yellow Wallflowers (*Cheiranthus cheiri*), on the rocks. The *Asphodelus fistulosus* and *Aristolochia rotunda* are in blossom near the sea at Petite Afrique—a rather warm locality. The Black Thorn (*Prunus spinosa*), and other kinds of Plums, also the standard Peach, Apricot, and Nectarines are in blossom, the Almonds being fully out in leaf.

A plan has been adopted here amongst some of the visitors for the investigation of wild flowers, which might, perhaps, be advantageously followed as the spring advances in some of the English country districts. About twenty ladies and gentlemen meet weekly and produce any specimens of plants or flowers they may find during their country rambles. These form the subjects of mutual discussion, the names and other particulars being given by those parties who are most conversant with them for the information and instruction of the others. Considerable interest is excited, and also amusement and instruction afforded. I would strongly recommend some such proceeding to any of your readers who may be circumstanced so as to admit of adopting it, and should be happy to afford any further information in my power as to the mode of carrying it out into practice. It affords, what is often much needed for the young, a source of healthy recreation and exercise combined with profitable instruction. We are also at the same time, in some degree, complying with the exhortation of our Saviour, "Consider the Lilies of the field how they grow," enforced by the additional reflection, that "even Solomon in all his glory was not arrayed like one of these."

From reading Mr. Beaton's accounts from time to time of his Experimental Garden, it has occurred to me that something in this way might be done so as to ascertain, from the experience of this country and climate, what plants would continue in flower during the winter, when they are so much needed in English conservatories, where a similar artificial climate may be maintained. It might be a very useful object for the investi-

gation of the authorities of the new Gardens at Kensington, which will, I presume, take almost a national lead in such matters. On a future occasion I may return to the subject (if you concur with me in thinking it desirable); but in the meantime I would state that in the beginning of next month there is to be held here a general show for the various productions—floricultural, horticultural, and agricultural—of this district of the country, which will, I presume, afford an opportunity for acquiring much practical information on these subjects; so that it would almost make it desirable for some competent commissioner to be sent over on purpose.

I may mention a fact in natural history, which will, perhaps, be interesting to your ornithological readers, as your cosmopolite journal embraces a great variety of subjects. During the winter a species of Swallow has been almost as numerous as we see them in England in summer. They are not, however, the same as our summer Swallow, being of a browner colour and not so elegant in form—rather more like a Marten. I am informed they are the *Hirundo rupestris*, which, after having passed the warm season amongst the mountains, come to spend the winter in the basin of Nice, and appear to be indigenous in this country. They live, like the others, on flying insects, which from the warmth of the climate they find here.—*EDWARD COPLAND*.

NEW AND RARE PLANTS.

PUYA GRANDIFLORA (*Large-flowered Puya*).

One of the most striking of the Natural Order Bromeliaceæ. Hexandria Monogynia. Native of Real del Monte.—(*Botanical Magazine*, t. 5234.)

ÆCHMEA MELINONTII (*Copious-flowered Æchmea*):

Nat. Ord., Bromeliaceæ. Hexandria Monogynia of Linnæus. Native of South America. Thyrsus densely crowded with crimson flowers tipped with black, looking before opened very much like the seeds of *Abrus precatorius*, so well known as beads under the name of "Crab's eyes."—(*Ibid.*, t. 5235.)

COLEUS INFLATUS (*Inflated Coleus*).

Nat. Ord., Labiæ. Didynamia Gymnosperma of Linnæus. Native of Ceylon. Its pale lilac flowers open in December, and are then welcome, though not showy.—(*Ibid.*, t. 5236.)

IMPATIENS WALKERI (*Walker's Balsam*).

Nat. Ord., Balsaminæ. Linn., Pentandria Monogynia. Discovered by General Walker in Ceylon. Flowers scarlet, and beautifully contrasting with the dark foliage.—(*Ibid.*, t. 5237.)

POLYGONUM CHINENSE FOLIIS PICTIS (*Painted-leaved Chinese Buckwheat*).

Nat. Ord., Polygonaceæ. Linn., Octandria Trigynia. Native of China, Japan, and many parts of East Indies. "Some leaves are purple on the same stem with the green ones, and both are marked with broad white lines in the form of the letter V, margined in the inside with a broad line of deep purple or blackish-green." Really worth culture as a greenhouse plant.—(*Ibid.*, t. 5238.)

THE CAULIFLOWER.

Few vegetables form a more agreeable adjunct to the dinner-table than good Cauliflowers, and to have them in excellent condition for a long period has been the aim of all good cultivators from a very remote period.

The advice given for their growth in old garden works is, in most cases, applicable at the present day; but it is fair to say some additional improvements have been made which it is right should be mentioned, and as our seasons do not always present that long-continued feature of severity in winter (though taking an example of the present one some of them do), we may be allowed to modify some of the conditions for winter preservation which the old writers on gardening matters seemed to regard as absolutely necessary to success, although in seasons like the present one they have, doubtless, acted on the right side.

Like that of all the other members of the Cabbage family, the origin of this useful vegetable is but imperfectly known, neither is it worth while to trace it backwards; for most likely its present condition of usefulness was only arrived at by slow and oft-repeated sowings of seed from the most perfect specimen, until the liabilities of the plant to sport to its original wild condition had, in a great measure, been overcome. That this was

not accomplished all at once may be easily guessed at, for after many generations of improvement there will now and then plants appear of that wild character bordering much on what we may believe the original to have been. But as such sports are far from common, they are of little consequence to the general cultivator, who, nevertheless, at all times takes care to select his seed only from such plants as exhibit the feature nearest to that standard of perfection which is so well known as to require no explanation here. Suffice it to say, Cauliflower seed of good quality can never be very plentiful. I once heard an eminent grower, and one who also grew his own seed, say that he could not grow his seed to sell at the price it was usually quoted in the market; and as his situation, soil, and other conveniences were all favourable to the production of seed, it follows that either the majority of seed in the trade is from indifferent varieties, or in some adulterated, to meet the low price that buyers will have it at, for they are equally culpable with the seller. Be this as it may, good Cauliflower seed can never be produced in quantities sufficient to allow it to be sold at a low price, for the best kinds do not furnish much seed: its dearness, then, ought not to be grumbled at if it be good. Having made these general observations on the plant and its seed, a few remarks on its cultivation may follow, divided into the following heads:—

Soil.—Like the whole of the family, this one seems to delight in good living, and in the fat of the land it seems to prosper more than anywhere else. A deep, rich, loamy soil rather inclined to be stiff than light, unless the situation be a moist one, and then a light soil answers best. An obstinate untractable clay will hardly do; but if the latter be pulverised with an admixture of lime, and exposure to frost, drying winds, or long-continued drought, the Cauliflower will thrive in such a soil; for it often thrives in a soil containing a goodly portion of lime. Nevertheless, the deep, rich, alluvial soils bordering such rivers as the Thames and Mersey, seem more adapted to it, and with the aid of liberal supplies of dung or other manure, this vegetable arrives at the greatest state of perfection. Although this is not precisely the soil to preserve plants through a long and hard winter; but for summer growth it stands pre-eminent in the generality of seasons, but such an unusual summer as the last has been, a drier situation even when much less rich in manurial matters seemed to answer better, for the latter produced a sort of gouty habit, which exhibited itself in deformed heads, blistered leaves, and the other features of an unhealthy state of things. Whereas in very dry seasons a moist situation answers best, as furnishing the plant with those juices its quick growth and succulent condition render so necessary to its welfare; but in a general way the medium class of soil answers best.

Sowing the Seed.—Strange to say, the practice of Abercrombie and others, recorded nearly a century ago, cannot well be improved on for the first crop, which was to sow on the 21st August for the crop that was to stand the winter, and come first into use the following season. Some growers still adhere to this, and with a fair share of success, while others wait a little later; and I believe Mr. Barnes, of Bicton, does not sow his first crop until the 1st of October, and then does it on a slight hotbed, hurrying on the plants to overtake those sown before in other places. Doubtless this plan is the best for such an early district as the one he practises it in, where a more advanced growth might result in the plant running prematurely to seed, or, in the language of the trade, buttoning. Be this as it may, a very good practice nearer London is to sow in a favoured spot about the 1st of September; and if the weather be very hot, to slightly shade and water the bed; or, if it be of the contrary description, to cover the bed with any spare lights. Care must also be taken to keep insects of all kinds at bay. Dustings with soot, wood ashes, and lime might be made about a week after the seed is sown; and if any yellowness or holes in the seed-leaf appear, to be sure and trace out the cause—for a failure in this crop is very difficult, if not impossible, to obtain a substitute for. Let the seed-bed, therefore, be duly attended to; and the result will be a nice brood of healthy young plants, all of a size, and all ready to plant out at one time to their winter quarters, which will be described hereafter.

Now, though the above may form an example of the manner in which the seed-beds of Cauliflower ought to be treated, it is not by any means the only one; neither is the time above mentioned the only one adopted. A small patch of seed may be sown about the 20th or 24th of August; and some of these plants may be mixed with the later ones to plant in the hand-

glasses that stand the winter, and produce the first batch of Cauliflower on the spot they stand the winter on. But too much dependance must not be made of this sowing, as the plants are not unlikely to button in spring. But it is always advisable to try a few, and, if they do not succeed, the loss is not much; if they do, they come in sooner than the general crop, and a few days are of great importance with this as well as with many other vegetables.

The next sowing to follow the above may be made in February, and, if possible, on a slight hotbed. Usually one is made for Celery and such things; and if a corner of this could be spared for a small quantity of Cauliflower, the plants come in handy, and are sure to be acceptable, a spare light or two for a short time until the plants be fairly up, and then any other covering at nights will do until the plants will bear pricking out, which ought also to be done on a nice, warm border, or, still better, in a frame and glass. This, however, is not always obtainable at this season, and consequently recourse must be had to the means that are disposable.

As these may be treated of hereafter, it is right here to say that, in conjunction with the sowing just made in a hotbed in February, let there also be one under a south wall at the same time, or as soon after as the state of the weather admits; and another sowing on a larger scale may be made in March on a suitable bed in the kitchen garden, which is to be followed with other sowings at intervals of a fortnight apart up to the end of June. After which until the 20th of August it is hardly necessary to make any; for although it sometimes happens that those sown the first week in July may come into use that autumn, it is seldom they do so, and the preceding sowing is quite late enough. Sowings in hot weather may be shaded during bright sunshine and watered at the same time, care being taken at all times to keep insects and birds away; and in dry weather the covering for the seeds had better be sifted leaf mould, which does not cake and harden with the water, and will also allow of being laid on a little thicker than the ordinary mould of the bed.—J. ROBSON.

(To be continued.)

FUMIGATING WITH TOBACCO SMOKE BEDDED-OUT PLANTS.

As the time is at hand for planting our Pansies, Verbenas, &c., from the store-pots, I offer a few observations on the planting in the garden borders.

In whatever shape they are intended to be, provision should be made for keeping the plants clean by hoeing, &c.; but the most difficult point is the destruction of green fly, which, once established, not only spoils the flowers, but is most injurious and often fatal to the plants themselves.

I have tried most of the nostrums prepared from time to time, but long since came to the conclusion that for this purpose nothing equals the smoke of tobacco—indeed, I may say for all purposes, in-doors and out, when it is possible to apply it, on account of its cleanliness, conveniences, and searching character; for smoke insinuates itself into every part, while washes and powders do not, and involve time and trouble, without completely effecting the object after all.

Many are quite aware of this, and adopt the fumigating process for houses and frames; but they are ignorant of any means of fumigating plants in the ground. I accomplish it completely, without trouble or failure, as follows:—I have a deal box (it is an old packing-case) 3 feet long, 2 feet broad, and 18 inches deep, and when my beds are raked down, I place this (having removed the lid) upon the border, and mark out the beds, leaving about 9 inches or a foot between each division, so that the box may cover without disturbing the plants.

I have a hole in the outer end, with a plug. When I fumigate, I turn the box over the plants, press down the edges, and insert the fumigator (I use that called "Brown's patent"); a very small quantity of tobacco suffices, and a few turns of the handle of the fumigator fill the box—not a particle of smoke escaping. I generally do this at night, and remove the box in the morning, stirring the mould and watering, and I always find the fly destroyed.

Two or three of these boxes can be filled with smoke with half an ounce of tobacco; and I know nothing cheaper.

If the tobacco is not grown, but purchased, I recommend that used by sailors called *Cavendish*. It is the strongest, and

most suffocating. I have nothing to do with the paper preparations of tobacco—saturated, in many cases, with treacle, I believe; at all events, susceptible of fraud, and injurious to delicate plants.

I will hereafter, with your permission, describe my mode of fumigating standard Rose trees and other shrubs in the open air.—S. M.

DUMONT'S INSECT POWDER—STOCKS FOR ROSES—STRIKING ROSE CUTTINGS.

DUMONT'S Powders I have tried on a very small scale, as, luckily, I could only find one *Calceolaria* and one Rose in my greenhouse that had aphids on them. The result was, all the aphids were found in a few hours apparently dead on the mould. The plants have not been syringed, and the leaves are perfect. The application is effected simply by pressing the ball with the hand, and dusting the plant with the Powder.

In a former Number you mention Descartes as a stock for Roses. What Rose is this? I have long used the *Duc de Cazes*—a most vigorous Rose and an excellent stock. It has no thorns to interfere with budding, and answers admirably. Can my *Duc de Cazes* be Descartes? The flower is a light blush and a Perpetual. I had it many years ago from Garraway's, at Clifton, Bristol, where it was much used. At all events, I can strongly recommend a trial of it as nearly equal to *Celine*.

I quite agree with Mr. Rivers' remarks on the *Manetti*, that it should be budded low. From my experience it answers then best, but not when budded much above the ground.

You mention the forcing of Roses now in order to strike them. It would be of great service if you could name a few that bear forcing well. Are Tea Roses adapted for it?

Can you give any reason why two of the most beautiful Roses known are now hardly ever found in the modern catalogues—*Joan of Arc*, H.P., and *Amandine*? I suspect that the reason is, they are hard to bud, and so do not answer to the nurserymen; but few, if any, of the modern Roses, in my opinion, are superior to them. But amateurs making a collection should insist on having them.—AN OLD SUBSCRIBER.

[All the Tea, China, and Noisette Roses, without one exception, may be gently forced in the spring to make young shoots for cuttings, just as was said of *Rosa odorata*, and the same as is done now with *Verbenas* and other soft-wooded plants. Very young tops of all these Roses are now, and have been, made these forty years last past, and struck as freely as *Verbenas*, but not in quite so short a time.

Two-thirds of the Bourbon Roses submit to the same rule and practice, and more than one-third of the Hybrid Perpetuals the same. All this, however, be it remembered, must be in the hands of good practical gardeners. A true Rose grower would consider his calling a libel on his fame and fortune if he could not force any Rose, and strike the young tops from cuttings. The old *Rose du Roi*, or *La Perpétuelle*, *alias* Lee's Perpetual, is the hardest Rose to strike from cuttings in our books. But Mr. Burcham, the great Rose grower at Bungay, told us in 1851, that if we and our friends would club together and order two thousand of that one Rose from him, he would undertake to strike them all from cuttings that winter and the following spring, to be ready to plant out in May on their own roots.]

THE SCIENCE OF GARDENING.

(Continued from page 288.)

DEATH AND DECOMPOSITION.

As in the animal creation the period of life varies from a few hours in the ephemeron, to hundreds of years in the tortoise, so among the vegetable tribes, though it is circumscribed to a few months in some of our annuals, yet it extends to centuries in the Oak, the Chestnut, the Wellingtonia, and the *Adansonia*. But however varied in space, each has its limit of existence; and death, though its inroad may be delayed, finally effects a conquest over all.

Now, what is the death of a plant? and though this query admits of the ready answer that it is a want of the power to vegetate, though the requisites for vegetation are present, yet one question more difficult of solution follows upon this reply—What is that power of which death is the negation? and although neither the chemist nor the physiologist has ever

succeeded—probably never will succeed—in penetrating further than to an acquaintance with the phenomena of that power, yet these we have already seen are intimately connected with the gardener's art, and the phenomena attending its absence are well worthy of his study.

Some of the phenomena of that power which is justly called vegetable life, have just been traced through the development of parts—the circulation of the sap, the progress of growth, the indications of sensation, and the inroads of disease. We will now trace the phenomena of the plant's decline and final decay.

The first symptom of that decline is a deficiency of the usual annual development of parts. A permanently lessened production of shoots, or leaves, or fruit, or all of these, becomes apparent; and this non-production arises from a diminished power in the roots to imbibe, and of the vessels of the stem and branches to impel, the sap.

Thus Hales always found that the two, three, and four-year-old branches of trees imbibed water with much greater force than those of greater age; and that young vigorous Vines usually exuded their sap with much greater force than the older and less robust. So we have found that our annuals, such as the Dwarf Kidney Bean, *Mignonette*, *Clarkias*, and others, imbibed water with more than twofold rapidity when in full bloom, than other plants of the same species and size did in the autumn, though they were still growing and verdant.

Now, what is the cause of this deficient power—this decline of vigour? There appears little doubt that it is the exhaustion consequent upon the production of seed. Scarcely an annual exists which usually dies at the close of the season, after ripening its seed, but may be made to retain a vigorous existence if its inflorescence be removed as speedily as formed. *Mignonette* is a very familiar example; for this may be allowed to bloom, but if its flower-stalks be cut down before the seed-vessels are perfected, it becomes woody and shrubby, and will live and bloom for three or more successive years. If allowed to ripen its seeds, it dies the same autumn. The common *Nasturtium* is an annual; but the double *Nasturtium*, says M. De Candolle, has become a perennial, because its flowers, deprived of the faculty of producing seeds, do not exhaust the plant, and it is probable that every annual rendered double by cultivation will become a perennial.

This explains why fruit trees are weakened, or rendered temporarily unproductive, and even killed, by being allowed to ripen too large a crop of fruit, or to "overbear themselves," as it is emphatically termed by the gardener.

The thinning of fruit is, consequently, one of the most important operations of the garden, though one of the least generally practised. On the weaker branches of the Nectarine and Peach, an average space of nine inches should be between each brace of fruit, and on the most vigorous wood of the most healthy trees they should not be nearer than six inches. This enforcement of the importance of thinning fruit is not intended to be confined to the two trees specified; it is equally important to be attended to in all other fruit-bearers, but especially the Vine, Apricot, Apple, and Pear. It should be done with a bold, fearless hand, and the perfection of that which is allowed to remain will amply reward the grower in the harvest time for the apparent sacrifice now made. But he will not reap his reward only in this year; for the trees thus kept unweakened by overproduction, will be able to ripen their wood and deposit that store of inspissated sap in their vessels so absolutely necessary for their fruitfulness next season.

The berries of the Grape Vine are best thinned from the branches with a sharp-pointed pair of scissors, care being taken to remove the smallest berries. This increases the weight and excellence of the bunches; for two berries will always outweigh four grown on the same branchlet of a bunch, besides being far handsomer, and having more juice as compared with the skins. The average weight of the bunches on a Vine may be taken, when ripe, at half a pound each, and with this data it is easy to carry into practice Mr. Clement Hoare's excellent rule for proportioning the crop to the size of the Vine.

If its stem, measured just above the ground, be three inches in circumference, it may bear 5 lbs. weight of Grapes.

| | |
|-----------|---------|
| 3½ inches | 10 lbs. |
| 4 | 15 |
| 4½ | 20 |
| 5 | 25 |

And so 5 lbs. additional for every half inch of increased circumference.

Although fruit-bearing is the most influential curtailer of a plant's longevity, there are others of scarcely less fatal efficiency, among which are improper supplies of moisture, obnoxious soils, deleterious food, uncongenial temperatures, and deficient light. These all tend to shorten a plant's existence, or even at once to destroy it if administered in a violent or protracted degree.

Excessive moisture induces that over-succulency which is ever attended by weakness, unnatural growth, and early decay. Such plants more than any others are sufferers by sudden vicissitudes in the hygrometric state of the atmosphere, and are still more fatally visited if exposed to low reductions of temperature.

Soils containing obnoxious ingredients are certain introducers of disease and premature death. An excess of oxide of iron—as when the roots of the Apple and Pear get into an iron red, gravelly subsoil—always causes canker to supervene. In the neighbourhood of copper-smelting furnaces, not only are cattle subjected to swollen joints, and other unusual diseases, causing decrepitude and death, but the plants also around are subject to sudden visitations, to irregular growths, and to unwarned destruction; and a crop once vigorous will suddenly wither as if swept over by a blast. There is no doubt of this arising from the salts of copper which impregnate the soil irregularly as the winds may have borne them sublimed from the furnaces, and the experiments of Sennebler have shown that of all salts those of copper are the most fatal to plants.

That they can be poisoned, and by many of those substances, narcotic as well as corrosive, which are fatal to animals, has been shown by the experiments of M. F. Marcet. The metallic poisons being absorbed are conveyed to the different parts of the plant, and alter or destroy its tissue. The vegetable poisons, such as opium, strychnia, prussic acid, belladonna, alcohol, and oxalic acid, which act fatally upon the nervous system of animals, also cause the death of plants. Does not this favour the opinion of those who believe that there is something in plants analogous to the nerves in animals? is the naturally suggested inquiry made by Dr. Thomson, formerly the Glasgow Regius Professor of Chemistry.

The poisonous substance is absorbed into the plant's system, and proves injurious when merely applied to its branches or stem, almost as much as if placed in contact with the roots. Ulcerations and canker are exasperated if lime be put upon the wounds; and when Dr. Hales made a Golden Reinette Apple tree absorb a quart of camphorated spirits of wine through one of its branches, one half of the tree was destroyed.

An uncongenial heat is as pernicious to vegetables as to animals. Every plant has a particular temperature, without which its functions cease; but the majority of them luxuriate most in a climate of which the extreme temperatures do not much exceed 32° and 90°. No seed will vegetate, no sap will circulate, at a temperature at or below the freezing-point of water; yet the juices of the plant are not congealed even at a temperature far more depressed; and we know of no other more satisfactory proof, that like a cold-blooded animal—the frog and the leech for example—it becomes torpid, though life is not extinct, until excited by a genial temperature. No cultivation will render plants, natives of the torrid zone, capable of bearing the rigours of our winters, although in some instances their offspring raised from seed may be rendered much more hardy than their parents. When a new plant arrives from such tropical latitudes, it is desirable to use every precaution to avoid its loss; but so soon as it has been propagated from, and the danger of such loss is removed, from that moment ought experiments to commence to ascertain whether its *acclimatisation* is attainable. That this should be done is self-evident; for the nearer such a desirable point can be attained, the cheaper will be its cultivation, and consequently the greater will be the number of those who will be able to derive pleasure from its growth: hence, it is very desirable that an extended series of experiments should be instituted, to ascertain decisively whether many of our present greenhouse and stove plants would not endure exposure to our winters, if but slightly or not at all protected. It may be laid down as a rule, that all Japan plants will do so in the southern-coast counties of England, but it remains unascertained to what degree of northern latitude in our islands this general power of endurance extends. "Foregone conclusions" should have nothing to do with this matter. Experiment, and experiment only, ought to be relied upon; for we know that the Larch was once kept in a greenhouse; and only recently has it been proved that such South American plants as *Tropæolum pentaphyllum* and *Gesnera Douglasii* have been found to survive our winters

in our garden borders; the first in Scotland and Suffolk, and the second in Herefordshire.

Another fact is, that many tropical plants of every order and species have been found to require much less heat, both during the day and during the night, than gardeners of a previous century believed. Other plants than those already noticed have passed from the tropics to our parterres, and even to those of higher northern latitudes. The Horse Chestnut is a native of the tropics, but it endures uninjured the stern climate of Sweden. *Aucuba Japonica*, *Pæonia Moutan*, we all remember to have passed from our stoves to the greenhouse, and now they are in our open gardens.

Every year renders us acquainted with instances of plants being acclimatised; and, in addition to those already noticed, we find that Mr. Buchan, Lord Bagot's gardener, at Blithfield House in Staffordshire, has an old Cinnamon tree (*Laurus Cinnamomum*), under his care, which ripens seed: from these many plants have been raised that endure our winters in a conservatory without any artificial heat. Then, again, there is no doubt that all the *Coniferae* of Mexico, which flourish there at an elevation of more than 8000 feet above the sea's level, will survive our ordinary winters in the open air. Among these are *Pinus Llaveano*, *P. Teocote*, *P. patula*, *P. Hartwegii*, *Cupressus thurifera*, *Juniperus flaccida*, *Picea religiosa*, and some others.

Closely connected with the consideration of acclimatisation of plants is the fact that they retain habits long after their removal to situations in which these habits are unsuitable. Thus the *Hyacinth*, a native of Southern Asia, begins to shew symptoms of vegetation here in autumn, which answers to the spring of its long-left native clime. So the *Fuchsia*, although it accommodates itself to our hemisphere, and submitting to remain dormant during the winter, will revive in the spring; yet the season during which it will grow most vigorously, if placed in a suitable temperature, is the winter, for this is the spring-time of its native country, Chili.—J.

(To be continued.)

FORCING.

(Continued from page 321.)

OLD gardeners avoided the now-rather-common mistake of supposing that growing some good-looking plants in pots, and filling a few flower-beds in a popular style, constituted gardening. They knew that there were things more tangible required than the mere gratification of the eye, and that even pretty objects lost their charm when there was little or nothing to gratify the cravings of the palate: hence, instead of making flowers the chief object, they invariably impressed on the minds of their pupils the importance of making a good supply of vegetables their first concern, a supply of fruit the second object, and the supply of flowers as the third matter of importance, winding up with the advice to keep friends with the cook, and that the only safe way to do this was always to have abundance. I will follow the same plan with these desultory articles on Forcing; and, treating of vegetables first, will commence with

ASPARAGUS.

This much-prized vegetable is found wild in several parts of the country near the seashore, and delights in a deep, rich, sandy loam. The modes of forcing it are endless, as it will do well in almost any circumstances that will yield a bottom heat averaging from 60° to 65°, and a top heat averaging 50° to 55°, with a rise of 5° more from sunshine. The earliest crops to come in during the middle of December are generally raised from the ground carefully, and then the roots packed closely on the top of a hotbed—such as one made with a foot of dung a little heated, and covered with 18 inches of tree leaves beginning to heat, and 3 inches of light soil. In severe weather the sides of the box will need protecting with linings, and the glass will want covering at night. Any house where fire heat is used will answer well for this purpose and with less trouble. When the roots are packed closely together throw a little light soil all over them an inch or so thick, and then give water at a temperature of about 60°, so as to fill all the interstices about the roots with soil; and, when settled cover with 2 inches—or 3 inches of soil of a light character. Rotten leaf mould will answer well, but any light soil will do. If less than the above heat is given, the shoots will be apt to

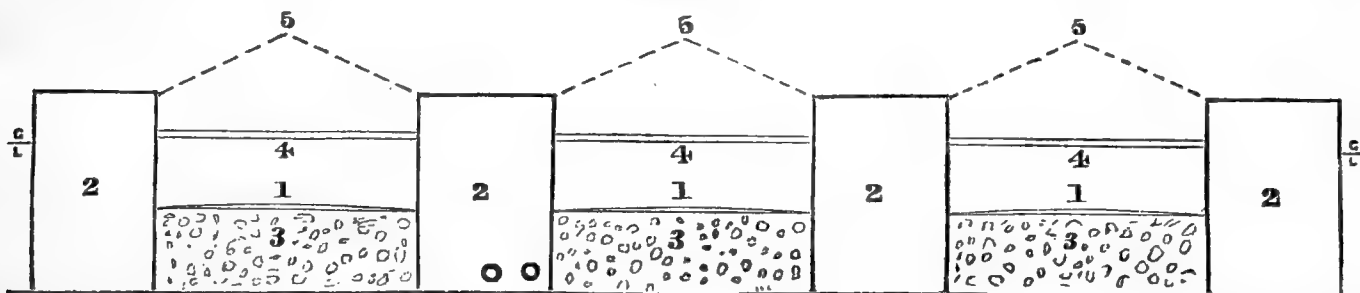
be hard; if more, they will come drawn and small. Top heat can be regulated by air-giving. Plants before being thus raised should be planted from three to seven years. In raising such roots at the end of October, or the beginning of November, it is best to choose a bed that had been little cut from the previous season, so that the buds should be more perfect and better ripened. At that time the heat given should not be above 50° at first, in order that the forcing may be gradual. About six weeks are the average time from taking up the roots until gathering the shoots, either by cutting or twisting them off. In January a month will be the average time, and in March about eighteen days.

There is much expense in thus forcing *Asparagus* so far as the value of the plants is considered, as it is little use thus raising them until they are at least from three to five years old, and then they are of no more utility afterwards. The only counterbalancing advantage is the rotation of cropping in the kitchen garden—almost everything doing well after trenched-up *Asparagus*-beds, and *Asparagus* again succeeding Celery, &c., nicely. The entire loss of the plants thus forced has led to various plans for forcing *Asparagus* in the beds in which it grows. Thus, supposing that the beds are 4 feet wide, and alleys between 2 feet wide, the alleys are dug out 2 feet or more deep, and filled with hot fermenting material, and loose earth being placed over the bed—that, too, is covered with fermenting material, and canvass or mats over all. In this case the shoots are cut when they come through the six inches or so of light soil, and will be white; but if the shoots are exposed for a few days in a heated place, and the ends resting on damp moss, the points will become green. This would be better done by placing frames over the bed and no litter inside.

SEA-KALE

like *Asparagus* likes a deep, rich, sandy loam, and requires much less heat to bring it to perfection than *Asparagus* does. Where much nicety is wanted it may be grown exactly as represented in *fig. 33*, only the covering should be wooden shutters. It looks very nice, and strong, and short when thus grown, and the less light admitted at the forcing time the better—not but that the plant, and especially the flower-heads, are very nice even in the green state, but the object is to place on the table stubby shoots about 6 inches in length, and as white as possible. Being easily excited it is forced readily in the open air where it has grown especially after Christmas, by covering the stools with pots, boxes, or even mounds of ashes or bog earth, and surrounding them with leaves or other fermenting material in a sweet state. When forced early in this way the fading leaves should be stripped off at the end of October, the crowns covered with ashes, and then litter or leaves thrown over the ground to keep the autumn heat in. Very little heat—say from 45° to 50°—will cause it to start after Christmas. As fine plants may be obtained the second year from seed, all this litter may be avoided by lifting the plants carefully, and putting them in a hotbed where all light is excluded, only the heat must be mild—hardly ever above 50° to 53°. It is still more easily managed in Mushroom-houses, cellars, stokeholes, or in any dark place of a house where there is the requisite heat. Beginners who are not sure in these matters may, instead of placing these roots in soil in a bed, place them thickly in largish pots, and then if the dung, &c., should be too hot, the pots can be raised and set on its surface. Pots placed in any heated house could easily be covered with another pot, and all the holes secured so as to keep out light. We have thus had it first-rate on the floor of a

Fig. 33.



1 Beds built with pigeon-holed sides below the earth-line.
2 Spaces between for dung linings, covered with stout boards, or left open, and heated with hot-water pipes.

3 Rough stones, &c., for allowing heat to penetrate beneath the bed.
4 Soil.
5 Coverings of beds, wood or glass.

Where nicety is required something of the plan shown in *fig. 33*, should be adopted. 1 Represents beds from 4½ feet to 5 feet wide sunk 3 feet beneath the ground level, supported by walls brick on bed, the lower half being pigeon-holed. 2 Are open spaces between, either for dung linings or for heating by hot-water pipes, the top being securely covered with wooden flaps, and these in cold weather in winter covered with moss or litter to prevent heat escaping. 3 Would represent the bottom of the pit filled with rough rubble as loosely piled as possible, covered with rough gravel at top, so as to allow the heat to penetrate beneath the soil rising as high as the line 4. 5 Would be covers of wood or glass. The matter might be simplified by having the one side of the pit a foot higher than the other, a sash laid across in the usual incline to the south, and these sashes would afterwards come in for frames, &c., in summer. In such a case the pits should run east and west. If with span-roofs they should run north and south. Good strong plants should be used at planting, and in from two years the pits will be fit for forcing. The soil should be light and rich; and there being no possibility of stagnant water, manure water as nitrate of soda, a little salt, and guano weak, should be used freely in summer. Four of such beds 20 feet long would supply a largish establishment after Christmas, but no more than two should be forced in one season—that is to say, the beds forced this winter of the year 1860, and spring of 1861, must grow all this summer, and have no gathering taken from them the next, especially the early bed, and, of course, will be forced in the winter of 1862 and the spring of 1863. By such a mode the same beds, if well manured, will last many years. By sinking the beds thus deep, and rough chambering with stones, the heat is at once communicated beneath the soil as well as around it, whatever the mode of heating. Near a coal pit hot water would be best and cheapest.

inery, and close to the flue in a greenhouse. After January there will be enough heat in a cellar under ground.

Unlike *Asparagus*, there is but little waste in thus lifting the roots of Sea-kale; for if the forced roots when done with are cut into pieces 5 inches or so in length, or even less, and are laid aside until March or April, these planted 6 inches apart in nice pulverised soil, and in rows 18 inches apart, will be fit for forcing again after the second summer. The smaller parts of the roots are generally the best for this purpose. The top end should not be buried, better leave it level with the ground, and put a handful of ashes over it. I once tried splitting the tops of some large crowns in planting, but that did not do—most of them rotted. Seed sown in April, and the seedlings thinned or replanted the following April, will be fit for taking up and forcing in winter. The taking-up plan is every way the most economical, cleanest, and neatest. Fine crops of blanched shoots may be obtained in May by covering the stools out of doors securely with pots or boxes as soon as they push freely; but that can hardly be considered forcing. We never saw the shoots finer than when merely covered with 6 inches or 7 inches of peat earth, removing it when the heads were cut.

BROAD BEANS.

These are not very generally forced; but with some families, very young Beans with nice bacon are looked forward to with more relish than even Green Peas. For this purpose the Dwarf Fan Cluster is the best. Sow in boxes in January, rather thickly, anywhere so there be a little heat. By the end of February or beginning of March, transplant four stout plants into an eight-inch pot, using rich loamy soil, firm the plants well in the pot, and if kept in a temperature from 40° to 50° at night, and from 45° to 55° during the day, Beans may be gathered from a month to six weeks before they can be got from a forwarded crop in the

open air. As for such a purpose the first Beans are used when quite young, each plant will bear from six to ten pods. Some people just after the Beans are fairly formed and swelling, but quite soft and green, prefer cooking the whole pod, seeds and all, like a young Kidney Bean.

R. FISH.

(To be continued.)

PECULIAR DISEASE IN GERANIUMS.

I AM fond of growing Scarlet and Pink Geraniums in pots for my greenhouse; but no sooner do they attain a respectable size than a peculiar disease makes its appearance at the ends of the shoots, the young leaves becoming speckled, and appearing as if punctured by an insect. The *Lucia rosea* kinds are specially subject to this calamity—in fact, I fear I must give them up altogether. I have tried shifting into poorer soil, but without any good effect; also with different composts, but with no better result. Can you say what is the cause of this?—CONSTANT READER, *Glasgow*.

[We can sympathise with you in this matter. We know the disease to our cost—the only one that we know of to affect Scarlet Geraniums. The cause of it is the attacks of some minute insect just as the leaf is unfolding from the bud. Some kinds are more liable to the disease than others. Every kind which has the sap of *Lucia rosea*, or that of *Baron Hugel*, in its tissues is more liable to it than any others; but out of many, and those seedlings of a much weaker blood—the blood of *Harkaway*—we have not seen an instance of this malady, so that delicacy in habit or constitution has little to do with it. A new race of very dwarf and delicate edging Geraniums, called *Liliputs* or *Minimums*, are entirely free from it in our collection, as are all the *Nosegays*.

The only remedy is to stop the shoots the moment the first leaf is seen affected; and if the plant could then be indulged with a little more moist heat, as that for forcing *Roses*, the cure could be easily completed. We saw it by the dozens and scores, in a nursery a few years back, and most of the plants had to be cut back in May more than one-half the length of the shoots; but, by watching closely, the mere stopping of the shoots will do. We have two plants now under that rule, a kind which is affected every year. It is the best white-eyed kind we know from *Baron Hugel* and *Mrs. Rickets*; but from its uniform liability to such a malady, we must never let it out of our own hands, but keep it for the breed.]

THE ROOTS OF FRUIT TREES.

(Continued from page 354.)

IN highly cultivated gardens we often see fruit trees growing vigorously, producing abundance of watery shoots, which scarcely ever ripen, and, consequently, never produce any fruit-buds. Many cultivators try to remedy this unfruitful state by severe pruning—a course that only increases the evil. If the subsoil is clay, and that undrained to a sufficient depth, then infallibly canker seizes upon the crude shoots, and they perish. I once saw a remarkable illustration of this state in the neighbourhood of Leeds, in Yorkshire. I had the place to improve, and I observed several large Apple trees on one part of the grounds in perfect health, and bearing fine, well-swelled, good fruit; and others of the same kind, growing lower down on the same ground, diseased, cankered, and half dead. I was curious enough to try to find out the reason for this remarkable discrepancy. I had the soil of the part where the healthy trees were examined, and the soil where the sickly ones were examined also. To all appearance there was no difference, either in quality or depth. Digging still deeper, I found the healthy trees were growing on a shaly, dry subsoil, whilst the others were planted on a clay subsoil undrained. Here was the cause: the trees had grown equally well for a few years, but as soon as the roots reached that part that was clay in a wet state, the young shoots all cankered, and half of them perished. I had these lifted, the land drained, and concrete put under each tree. They soon showed a favourable result from this labour, and recovered health and productiveness.

Whenever the roots of fruit trees have to seek for food in bad subsoils the trees will invariably become sickly: therefore attention, to prevent the roots from pushing down into this bad substratum, should be given, or they had better not be planted

at all. It matters not whether the subsoil be wet clay, wet sand, or wet gravel, the effect will be the same. If the most advanced roots for half the year, or perhaps more in wet seasons, reach this wet subsoil, they, instead of healthy nutriment, will suck in pernicious food, which will soon render the tree unhealthy. Now this disappointing state of the roots might undoubtedly be prevented naturally by choosing the position of the fruit garden or orchard with a favourable soil and subsoil; but that is not always a matter of choice, without going to an inconvenient distance from the homestead: therefore the cultivator will exercise his judgment, and force, as it were, by art the situation he is compelled to adopt to grow his fruit trees satisfactorily.

As I have already shown, I trust, how the roots of the trees in a fruit garden on a poor thin soil and bad subsoil may be furnished with a pasture to find healthy food, and thus restore the trees to health and fruitfulness, I propose now to show how the same good effects may be induced on trees growing on a deep, rich soil, resting on an unhealthy subsoil, and, consequently, in an unfruitful state, producing annually, indeed, abundance of strong young shoots, but no fruit, or, at least, next to none. It may be, after two or three dry seasons the roots will find some proper nutriment, the wood will be ripened, and then, if a favourable spring happens in conjunction afterwards, the trees may bear a crop of fruit; but in our variable climate such a succession of favourable years is an exception, not a rule. What we require is a fair average crop every year, and unless very severe late frosts occur we ought to expect such a crop.

The first operation to be performed to bring coarse-growing trees into a fruitful state is what all sensible writers on the subject recommend (I do but follow in their wake)—and that is, let the land be deeply and effectually drained in the same manner I described in my last paper on this subject. This being done in summer or early autumn, I would then lift the trees one by one, preserving all the roots as entire as possible, and underneath the soil I would place a layer of concrete formed thus:—Lay first a covering or layer, three inches thick, of small stones, brick-ends, or clinkers, making the centre where the trees are to stand the highest; roll this smooth, and cover it with a second layer of Roman cement and lime. This will set directly, and form a mass through which the roots cannot penetrate into the bad subsoil below. Then examine the roots, prune clean off all that are diseased, and also all such as strike directly downwards. The branches might also be conveniently pruned at the same time. Then lay in the space on the top of the concrete a covering of good fresh soil, but no dung—I think dung injurious to the roots, and more especially the roots of trees bearing stone fruit. After that is pressed down by the feet firm, lift up the tree, and set it in its place; then spread the roots out equally on every side, and cover them with the soil. Then, when all is completed, give the soil a good watering—it will settle it much firmer than either treading with the feet or pounding with a rammer. If the top is heavy, secure it by short stout pegs and wire, or tarred rope. This method is far superior to stakes or props. See my description of this mode of fastening large trees in my last paper. The intelligent planter will easily understand that the excessive watering can do no harm to the roots; for the concrete, being a kind of underground hillock, throws all the superfluous water off at the sides, where it will sink away into the drains. The first tree being completed, then take the next in hand, and so proceed till all are finished.

Mulching with short, half-rotted dung will be of great service. It will keep the frost out of the ground and encourage the roots to make fresh growth. During the season of rest they will be storing up nourishing sap to feed the buds, and thus cause them to break with greater vigour in the spring. When summer approaches this dung may be gently forked in, leaving the surface just rough enough to retain the warm summer's rain, to open the soil and afford easy space for the roots to push their way through it.

The management afterwards is of great importance. The roots should by all means be encouraged to keep as near the surface as possible: hence, as far as they extend, the spade should never be used for deep-rooting vegetables. It should be forked over in the autumn and spring, and, if absolutely necessary, light crops of shallow-rooted vegetables only grown upon it. By using a fine-grained fork and short manure a sufficient quantity of earth will be stirred and enriched for such vegetables as Lettuces, Turnips, Spinach, and Salads; whereas, if the spade

is used to stir the soil the younger and best-placed roots are necessarily cut and injured.

The same principles of culture should be adopted for the roots of wall trees, only the concrete should be formed and laid so as slope from the wall; and at the side of the concrete furthest from the wall there should be a good drain to carry clear off the superfluous water. If the above described operations are carefully carried out the results will be healthy roots, and, consequently, healthy branches, which will bear good fruit in due season.

Much has been written on root pruning, and, no doubt, when trees are unfruitful through excessive free growth, the cutting off a portion of the roots will check that growth and induce fertility; but such pruning is, it must be allowed, working in the dark. It would answer better and be more certain in its effect if the tree was entirely replanted. The roots could then be properly pruned to a less or more extent, according as they required so operating upon.

There is only one way in which trees may be unfruitful, and yet the roots may be in a healthy condition—and that is when they are too thick on the ground or too full of branches. The remedy in such a case is palpable: Let the trees be judiciously thinned, and also the branches, so as to admit the sun and air, and then the trees will be as fruitful as could be wished. I conclude my papers on the roots by repeating my maxim, Take care of the roots and the tops will take care of themselves.—T. APPLEBY.

ROYAL HORTICULTURAL SOCIETY.

FRUIT COMMITTEE.—A meeting of the Fruit Committee was held on Tuesday, the 12th inst. Mr. James Fraser in the chair. The following presentations for the experimental crops at the Garden were announced:—

Messrs. Wrench & Sons, London Bridge—A collection of ten varieties of Peas.

Messrs. Nutting & Sons, 60, Barbican—Collections of Lettuce, Celery, and Beets.

Messrs. Minier, Nash, & Nash, 60, Strand—Collections of Broccoli, Lettuce, Celery, Beets, and Kidney Beans.

Messrs. Charlwood & Cummins, Covent Garden—Collections of Lettuce, Celery, and Beet.

Mr. Veitch, jun., Royal Exotic Nursery, Chelsea—Collections of Lettuce, Beets, and Celery.

Two Seedling Apples were sent by Mr. J. J. Foster, of Edgware, neither of which appeared to possess any remarkable merit. Mr. B. W. Caut, of Colchester, sent a Seedling Apple, which is of small size, oblate, and perfectly green, but becoming of a yellowish tinge as it ripens. Of those exhibited, only three or four were ripe even at this late season, all the others being quite green, hard, and acid, looking as if they would keep for months to come. When ripe, this is a fine Apple; but the Committee deferred judgment upon it till next Meeting, the remaining fruit in the meantime being sent to the fruit-room at Chiswick.

Mr. Laxton, of Stamford, sent a dish of Stamford Pippin, which unfortunately had been in contact with some substance which destroyed the flavour.

Mr. Cunningham, gardener to the Bishop of London, Fulham, sent a nice collection of Apples, remarkably well kept, and which consisted of ten distinct varieties; for these he was awarded a Certificate of Commendation.

Mr. Culverwell, of Thorpe Perron, sent a small bunch of an oval black Grape, grown in a pot. The bunch was in fine condition, the berries being quite plump, and the stalk and pedicels being as fresh and green as those of early Grapes. The sort came from the south of France, and bears some resemblance to *Catalanesia vera*, but it was impossible to say that it was identical without closer comparison. At all events it is a most delicious and very valuable Grape.

Mr. Melville, of Dalmeny Park, sent specimens of his Fear-nought Cabbage, respecting which a report of the Sub-committee appointed at last Meeting was also read. It was awarded a First-class Certificate. His Sprouting Cabbage was again submitted to the Sub-committee.

Mr. Spencer, of Bowood, sent a bundle of grafts of Bowood Muscat Vine to be distributed among the Committee, and for which a vote of thanks was passed to Mr. Spencer.

Mr. Fraser, of Lee Bridge Road Nursery, exhibited scions of

Pear trees, which had become quite black in consequence of the severity of the past winter.

FLORAL COMMITTEE.—The signs of the return of the floral season at the Meeting of this Committee, held on the 12th inst., were somewhat cheering to those who have been for months seeing and hearing of losses and crosses in their own and their neighbours' gardens; and though, owing to the severity of the winter, the signs were somewhat more scant than would otherwise have been the case, yet they gave evidence that gardeners have not been quite "froze up."

An interesting discussion arose on a sprig or two of a *Rhododendron*, a cross between *atro-virens* and *ciliatum*, which is said to be very hardy, forming a neat dwarf bush, with blossoms about the size of an *Azalea*, and said to be good for forcing. The plant had been forwarded for the previous Committee Meeting, but had arrived too late. The discussion on it was interesting, not so much on account of the plant itself as to the object of awarding the honorary certificates, it being thought by some that the Committee was too liberal in the matter, and that they ought to be awarded only for *fine* things. This, however, is a mistaken notion, I beg to submit, and so was regarded by the majority. There can be, of course, in one sense no sort of comparison between, we will say, a magnificent new *Lælia* or *Vanda*, a small variegated plant for edging, and a new green-edged *Auricula*; but in their way each may be as deserving as the other. The *Lælia* has been obtained at great expense and trouble; the bedding plant will be grown by thousands where only one of the *Orchid* is; and the *Auricula* may be the result of the most careful hybridising and the most watchful attendance; and whenever any new thing is really good for the purpose for which it is grown, it ought to be so treated.

From Osborne there were sent a few pips of a Pink, a cross between the common *Dianthus sinensis* and *Heddewigii*. From Barleston Hall Gardens came a box of an old but neglected plant, one of the prettiest and earliest of all spring-flowering plants for rockwork—*Saxifraga oppositifolia major*. The object in sending it was to draw attention to it, and so to bring it into cultivation again. It was accompanied by an interesting account of the extensive manner in which it was used. Mr. Bull, F.R.H.S., sent some plants of a new variegated plant for edging—*Agathaea celestis*. For this a First-class Certificate was awarded. It is dwarf and compact in habit, and is said to have a neat, small, blue flower. From Messrs. E. G. Henderson & Son came a collection of *Cyclamens*, varieties of *persicum*, and various other ornamental plants; and when some fine-foliaged plants were introduced from the Society's garden, the room looked very well. By-the-by, it is utterly unsuited for a Committee-room, the same inconvenience being experienced as in a school-room with folding-doors—the noise of the talking being quite confusing. It was wretchedly cold, moreover.

At the close of the proceedings a very interesting paper was read by Mr. W. Paul, of the Cheshunt Nurseries, Waltham Cross, on the various varieties of *Taxus baccata* (the common Yew), accompanied by a collection of pots of the different varieties. These Mr. Paul divided into four sections: 1, spreading habit; 2, pyramidal; 3, weeping; 4, variegated foliage. The thanks of the Committee were given to Mr. Paul, the paper ordered to be printed in the "Proceedings" of the Society, and a Special Certificate awarded for the collection.—D.

On Friday last Her Majesty, accompanied by their Royal Highnesses Princesses Alice and Beatrice, honoured the new Gardens of the Society at Kensington Gore with a visit, and inspected the progress of the works. The Members of Council who received her Majesty were H.R.R. the Prince Consort, President of the Society, Mr. Dilke, Mr. H. T. Hope, Mr. Henry Pownall, and Mr. John Clutton. Mr. Sydney Smirke, the architect, Mr. Nesfield, the designer of the Gardens, and Mr. Kelk, the contractor for the work, were in attendance to explain the details of the operations.

SHOW OF HYACINTHS.—Messrs. Cutbush & Son's grand annual Hyacinth Show is now in its full beauty, and may be visited any day during the week. Next week we shall supply a few notes upon the best and most attractive flowers.

TO CORRESPONDENTS.

YOUNG GLOXINIAS SHOWING BLOOM (*A Lover of The Cottage Gardener*).—The Gloxinias should have the flowers removed, the surface soil stirred, and the growth of fine foliage be encouraged.

CLIANthus DAMPIERI CULTURE (*Idem*).—This plant is impatient of pot-shifting. Sow each seed in a small pot, and when the plant is up, and before the roots begin to cling to, or even reach to, the sides of the pot, turn the plant at once into a large—say an eight-inch—pot, well drained, filled with sandy loam and peat, and be careful not to soak the soil further than the roots extend.

GLAZED EARTHENWARE PIPES FOR HOT WATER (*A Constant Reader*).—You would require 3 feet or 4 feet of iron piping to come directly from the boiler; after that distance the glazed earthenware pipes would do very well, especially if no great pressure was put on them. In uniting the joints, knock in some rope yarn, or something of that kind, at the end of the socket, and fill up the cavity with Portland cement, made nearly as thick as putty. Wet the joints with a brush dipped in water before filling them up with the cement.

SODA IN HOUSE SEWAGE (*A Regular Subscriber*).—Soapsuds alone are of little use to growing and flowering plants. The additional soda would not render the suds less beneficial. If used, one-part of the suds to six of water will be sufficient. If given in excess it will make the leaves decay. Manure water should be applied to the plants weak, and not oftener than twice a-week. It should never be applied in a strong state. To plants cultivated for their flowers it should not be given until the flower-buds appear.

VARIOUS (*A Subscriber*).—We cannot tell what weight of Potatoes you will require for planting an acre, as we do not know what sized sets you intend using. Planted in rows 2 feet apart, and 1 foot apart in the rows, you will require 21,780 sets, so if the sets average 3 ozs., you may easily calculate for yourself. Prune last year's shoots of the newly-planted Apple trees. We cannot tell where you can purchase Ligurian bees at present; they can sting but are not so irascible as the common bee. Any wooden hive can have a window in its side or sides, so that the bees can be seen.

CHRYSANTHEMUMS IN POTS (*W. C. W.*).—They are usually grown in eight-inch and eleven-inch pots, according to the size of the specimens. We do not know the address of Mr. Holmes.

FIELD-CULTURE OF STRAWBERRIES (*Strawberry*).—If straw should prove too dear this year to allow of its use for keeping the berries clean, we can only recommend spent tan, mowings of grass, and long litter from the stable. The last-named does not impart any flavour to the berries. The rain soon washes it clean.

CLIMBERS—PLANTING OUT SILENE (*Bos*).—You, like many other correspondents, seem to think editors are clairvoyants. It is difficult to advise on gardening subjects without knowing in what part of this kingdom the plants are to be planted. Nor do we know what Silene you mean. There are many of them, but most of them may be planted out early in April south of the Grampian range; but it is questionable if the 1st of May would not be the best time to put out any Silene where the frost you say killed rampant Roses or strong Rose climbers.

CYCLAMENS DONE FLOWERING (*L. J. L.*).—Some gardeners keep them dry in the pots all the summer; and some turn them out of the pots into the border about the middle of May, and take them up and pot them at the end of September. But we mean shortly to explain this difference.

PEACH TREES UNDER GLASS (*A Novice*).—These making an excess of young wood you had better root-prune. Dig a trench in a semicircle round them at about three feet from the stem, and cut through all the roots you meet with. Disbud and train just as you would the trees on the outer walls; and give abundance of ventilation. On no account manure the border, it would make the trees of still grosser growth. Water the border when the soil seems to require it. There is no separate work on Peaches under glass.

FLOWER GARDEN PLAN (*Harriet*).—Your garden plan is really very good—3 must be yellow, or you have a pig with one ear. The *Oenothera macrocarpa* would suit 11 to a nicety; and the four corner beds might be edged with *Nemophila* to be sown directly. 6 will be late. We would put variegated Mint edging round 2 and 10. 5 is most capital; but 7 will not do at all—black as midnight. Perilla must have white or variegated leaves next to it, on one side at least. Could you not get one dozen of Flower of the Day to put inside of Perilla, and make a dash with them? If not, sow it now with red and white *Clarkia* mixed, and they will be off by the first or second week in August. Then change to China Asters for the autumn, and we warrant your beds to look well till better times and more glass can be had.

BEDDING PLANTS (*A Young Gardener*).—The best six variegated Geraniums for your new garden are Flower of the Day, Bijou, Alma, Brilliant, Lady Plymouth, and Golden Chain. The best three or four kinds of Plain-leaved—Punch, Tom Thumb, or Crystal Palace if you could get it; Cottage Maid for Horseshoe, and Attraction. Six best Verbenas—Defiance, Mrs. Holford, General Simpson, King of Purples, Géant des Batailles, and the two striped Empress Eugénie varieties of pulchella. For six best Calceolarias, drop four, and take Aurea floribunda and integrifolia, or rugosa; but try *amplexicaulis* without training down. For Petunias, take or ask for the best white, the best purple, as there is no end to these; then Shrubland Rose. You must have a bed of *Tropæolum elegans*, and a couple of dozen of *Perilla nankinensis*, fifty or one hundred yards of *Lobelia speciosa*, the same of the variegated *Alyssum*—all for edgings, and then your new garden will do with some *Tritoma uvaria* in circles on the grass, and a Pampas Grass or two.

VARIOUS (*L. N. N.*).—A pit covered at night with matting would now do for Geraniums, but excessive wet and cold during the day must also be excluded. The Geranium cuttings will strike more readily in a gentle hot-bed than in the house. Leave the Roses uncut until by their vegetation you can be certain how far they are dead. We do not know where you can buy a Vinegar Plant. Dead leaves if not decayed may be collected now, and would probably heat sufficiently for striking cuttings.

DRYING POTATOES FOR PLANTING (*Gnipshuol*).—Dry your Flukes in a cool oven now, do not overdo them, and select for the purpose those which have not sprouted.

KIDDEAN MODE OF HEATING (*G. B. C., Kensington*).—We have said already, that there is nothing yet proved, in the practical application of the Kiddean system, to warrant any one adopting fixed rules for its details; all have yet to be first practised and proved. You have the principle, and the effects of one or two ways of applying it. But as to what you, or we, or Mr. Kidd, or any one else, may say farther than that is of no more weight than the flow-current in Polmaise. You do as your judgment may suggest, and tell us the results of your doing, and we shall give them to our readers with what suggestions they may point out to ourselves. We are not farther on the road yet than the length of heating plant-houses while the plants are at rest, and without applying moisture to them. Every step beyond that is to be proved in practice. We have no experience as to its use for heating living-rooms, nor has Mr. Kidd given us power to ask him on that branch of the subject. Can you give us a clue to what you heard as having been done in America with this system?

COVERING FOR CONSERVATORY (*An Old Subscriber*).—Try frigi domo. You neither tell us where you live, nor how your Cucumber-pit is heated, so how can we suggest a remedy? Can you send us a sectional drawing of it?

GLADIOLUSES IN OPEN GROUND (*J. G. V.*).—Mr. Beaton said at the time he did not recommend any one to repeat his experiment.

ICE-HOUSE MANAGEMENT (*W. Stewart*).—We need to know how your ice-house is managed, not how made, before we can tell the reason for such waste of ice, and the probable remedy. But the usual mismanagement of ice-houses where ice never keeps is this:—the house being filled, is forthwith closed so carefully, and the passages filled securely with straw, that there is no particle of moving air within reach of the great body of ice. The moment the warmth of the earth melts so much ice as will make a quart of water, unless that quart or cupful of water be at the very bottom of the stack of ice, and runs off at once into the waste drain, it is itself warmed, and rises in mild vapour, which will insinuate itself into every crack and space in the ice, and henceforward this vapour increases and wastes the ice daily at a rapidly increasing ratio. That "management," therefore, is like grafting the wrong end of the stock. *Pure air in rapid motion is the life preserver of ice*, whether it be stacked on the plain, in the wood, or deep in the earth. The surface of a large bed of ice in July will not damp a cambric handkerchief if it is exposed to a current of air; the air carries off the damp, or melting, as fast as it is made, and thus preserves the ice from the influence of damp, warm air, which is more destructive to it than a flame of fire, as many an alpine traveller could tell from his attempts at getting a dry bed within a cave covered with ice or snow. Stacks of ice on the plain, and covered with straw or fern, will keep ice better than a common ice-house, because the stack is surrounded with air which carries off the damp; therefore, the true way to manage ice in a common ice-house like yours is to have the house most thoroughly ventilated, as we ourselves have done for many years.

SHOOTS OF HYBRID PERPETUAL ROSES (*Querist*).—At this season and till after the end of May you can do nothing with the young shoots of Hybrid Perpetual Roses in the way of rooting them, unless you were such a propagator as would not need to be told.

SALVIA PATENS FOR BEDDING (*B.*).—We do not recognise the leaf, but it is not from any known *Salvia*; but keep the plant until it flowers—perhaps it may be valuable, and perhaps a weed. *Salvia patens* is the best blue bedding plant when it is well done, which it seldom is. *Ageratum* is the commoner used for blue; then *Delphiniums*; and then *Lobelia*, of which *speciosa* is the best.

POULTRY AND BEE-KEEPER'S CHRONICLE.

ENCLOSURES FOR PHEASANTS.

"WHERE there's a will there's a way"—an old saying that will remind many of their childhood and youth; of some early fits of rebellion; of some stern maiden aunt or uncompromising grandmother, who was not to be overcome by girls; or some bachelor uncle or grandfather who was proof against any entreaty that could proceed from boys. The "I can't" is obliged to give way to the proverb, but in after life it re-assumes the ascendancy; and many who would keep Pheasants, wild fowl, or other pets, bow down to it when they should adopt the saw. Just so we once heard the owner of many thousands of acres lament his inability to keep two breeds of fowls for lack of space. We look on these hobbies as charms about a country house; we view them as lessons to children, they inculcate kindness, forethought, and they are enemies to idleness.

A few weeks since we gave some hurried notes or instruction on this subject in answer to a correspondent, and we will now enter more fully into detail. We described the sort of place that will do for Pheasants; we will now state such as may and should be made where everything is at hand. The pens should be on a dry, gravelly spot, and if they are on a slight decline from the house to the front, so much the better. The floor inside the house should be raised 2 inches or 3 inches above the level of the pen in front; and the surface should be of loose gravel, as such is never dirty in any weather, and can always be cleansed if necessary, or, at any rate, a fresh surface made by simply drawing a heath-broom lightly over it. It also admits of being renovated by being raked. Of whatever material the fence-work be, whether of wire, netting, or lattice-work, the bottom of it all round—say from 18 inches from the ground, should be solid for many reasons. It is a great protection to

the birds. If two pens are formed by a division in the centre, it prevents them from fighting, and it saves them from many a fright from cats and vermin. In keeping all pets, it is necessary to remember their peculiarities, their natural habits, and those that are the result of the artificial state in which they are kept. The natural protection and safety of all birds is in flight—the use of their wings. It is a positive security from nearly all their enemies. They are deprived of this when kept in confinement. Another safety is, that they perch above the reach of their foes. Having closely studied the habits of birds, we have no hesitation in saying, that in a few hours a bird will have discovered the available security of any place in which it may be confined, and it will in consequence know it. Many birds, indeed almost all, become acquainted with place and with persons, and are tame in consequence; but their nature is not changed, and under unusual circumstances they are alarmed. Their first impulse is to fly: finding their inability to do so, they become alarmed, and then beat about their cage to their destruction, or, if not destroyed, they injure their plumage, and are wild and restless for weeks afterwards. For this reason we are strong advocates for 18 inches at least of solid fencing round the pen. We speak feelingly. We, last year, had a cock and two hen Silver Pheasants in a secure aviary, strong galvanised wire-netting, well and securely stretched. We knew there was a fox about the premises, but thought our pens were safe. They were; yet one morning the tenants were torn to pieces. There was only one way in which they could have been caught, and that was by the fox lying on the ground with his paw through the wire, and as soon as the birds, which in their fright were beating about, came within reach, he pulled them piecemeal through the wires, which were intact, and he had not been inside. Had we done that which we are now advising to others, we should have saved our birds.

We have already said they should have dust or ashes in their pen; also, if it be possible, it is well to enclose or plant a low-branching shrub. In hot weather this will be their resort. Whatever sort of Pheasants are kept, they must have water always, and it should be in a vessel that will keep it clean, and in which it is impossible for them to trample. We know nothing so good as Baily's fountains. Their food should be good barley, a few grains of Indian corn for a change once or twice a fortnight, meal slaked with water, and an occasional lettuce. *All their food should be thrown or scattered on the ground, no more at a time than they will eat, and on no account be put into any pan or trough.* If the pen does not afford grass, then large sods of growing herbage should be constantly thrown in. The birds are not only fond of the grass, but the fresh earth is also beneficial to them. Nothing will make them tamer or attached to their owner and feeder so much as occasional feedings with bread at stated intervals. Thus, after breakfast, luncheon, and dinner, if the crumbs and scraps of bread are carefully saved, they are valuable auxiliaries as food, and they accomplish a purpose. The birds should always be spoken to in the same terms, and in the same tone when they are fed. They soon know it, and come when they hear it. Nothing is more gratifying to the lover of these beautiful birds than to be able to show them at any time, and this is only possible when the attachment they have for their feeder outweighs their aversion to a stranger.

PLYMOUTH POULTRY SHOW.

THE above Show took place on the 13th and 14th inst. We are pleased to be able to announce this was a decided success, whether we take into consideration the number or quality of the birds entered, or the support it met with in the shape of visitors, as, the weather being very fine on both days, it attracted a goodly number; and no doubt a military band being in attendance was an additional attraction, which many looked upon as a pleasing contrast to the crowing of the cocks, &c.: but it was a somewhat difficult matter for those who were anxious to discuss the respective merits of the different pens to make themselves heard. The Show was held at St. George's Hall, Stonehouse—a room admirably suited for the purpose, being large, and light, and sufficiently well ventilated without being cold; and the pens were so arranged that each had an equal share of light, there being no dark corners.

We regretted to find that several good pens of birds did not arrive until after the prizes were awarded, thus losing all chance

of competing. Amongst these unfortunates were Mr. Kellaway's Cochins, which, after sending them from the Isle of Wight, must be a great disappointment to this gentleman. We would ask, Where did the fault lie?

The first class on the list was *Spanish*. Here Mr. Lane was successful, taking first. Mr. Rodbard was obliged to be content with second prize, as his birds were not exhibited in their usual condition, whereas Mr. Lane's were perfect in this respect; and had Mr. Rodbard's been in as good, we think their positions would in all probability have been reversed. Mr. Fowler was a good third. In *Dorkings* Mr. Roberts obtained first with a nice pen of birds, but he must in a measure attribute his success to Lady Thynne's misfortune; as, immediately on their arrival in the Show on Monday evening, one of this lady's magnificent hens was taken ill and died in a few minutes; otherwise there is not the least doubt but that her pen would have taken precedence of any other in the Show. The *Game* class comprised seventeen pens, all Reds; amongst them were some good birds. The hens in the Rev. G. S. Cruwys' pens were remarkably neat. This gentleman obtained both first and third prizes with Black and Brown Reds respectively. The best class in the Show was undoubtedly the *Cochins*. There were twelve pens all good birds. Mr. Tomlinson heading the list with a magnificent pen of Buffs, Mr. Fowler being second; and Mr. Stretch was a good third with a pen of Partridge. Mr. Ford, Mrs. Everett, Mr. Benbow, also showed good birds. The whole class was pronounced by the Judge to be excellent.

The *Hamburghs* of either variety were not good, which might in a great measure be attributed to the Gold and Silver being exhibited in one class. The best exhibitors will not enter where this is done. *Polands* were above an average class. Mr. Carlyon's Golden, and Mrs. Pettat's Silver, taking the two prizes. The prizes for *Brahmas* went to old names—Messrs. Craigie and Botham. They were hard run, however, by Mr. Fowler. Mr. Ballance made a clean sweep of the *Malay* prizes. A class for *Minorcas* is rather unusual, but there was one given here, Plymouth being rather noted for this breed, and both prizes remained in the town. In the "Variety Class," Miss Northcote obtained first with a splendid pen of White Spanish, which was claimed at £5 10s. immediately the Show opened. Lady Thynne was second with a pen of Silkies. There were also some good Sultans in this class. The *Game Bantams* were an excellent class, Mr. Oxland taking first with a beautiful pen of Duckwings; and Messrs. Sandford & Elliot second with a remarkably small pen of Black Reds, but the cock was not of the best of colours. Mr. Rodbard's third-prize Duckwings were also worthy of notice. In the class for "other Bantams," Rev. G. S. Cruwys' Gold, and Miss Everett's Silver-laced, were highly meritorious.

In *Aylesbury Ducks* Mr. Fowler again far outstripped his competitors, taking both first and second prizes with splendid birds. In consequence of the Committee not having given any separate class for either Rouens or East Indian Ducks, the entry in the "Variety Class" was but small, there being only four pens entered. The first prize going to a good pen of Rouens, the second to Mr. Ballance's East Indians. Strange to say, there was no entry of either Geese, Turkeys, or Pea Fowls.

In the *Single Cocks*, Mr. Rodbard obtained first for Spanish with a good bird, which was soon claimed at 50s. This gentleman also obtained first for Game Cocks with a beautiful Black Red. There was but one entry in the Dorking, Hamburgh, and Malay classes. In the first-named Lady Thynne exhibited a magnificent bird. Mr. Ballance also exhibited a good White Malay. Mr. Stretch obtained first for Cochins with a good Buff. In Game Bantams there were only two entries, which is a somewhat unusual occurrence.

Amongst the *Pigeons* were some good Carriers, and a splendid pair of Almond Tumblers exhibited by Mr. Archer.

There were also some good *Rabbits*.

The show of *Canaries* was first-rate. In the class for pairs of Belgians there were no less than fourteen entries. Mrs. Sandford taking first with a splendid pair of birds; and Messrs. Crocker and Hingston well deserved their honours.

We cannot conclude our report without congratulating the Committee on the success with which their praiseworthy endeavours to establish a good Show have been crowned, and we have not a doubt but that with a few slight alterations in their prize list, their Show may rank as one of the best in the kingdom; but we must not forget to mention that the success of the undertaking is mainly owing to the untiring exertions of the

able Honorary Secretary, whose endeavours to give every satisfaction to both exhibitors and visitors cannot be spoken too highly of. He was, however, ably assisted by Dr. Sandford, and two more energetic officials would be difficult to find.

SPANISH.—First, H. Lane, 69, Milk Street, Bristol. Second, J. R. Rodbard, Aldwick Court, Wrington. Third, J. K. Fowler, Prebendal Farm, Aylesbury. Commended, Master de la Saux Simmonds, Bishopstoke; G. Botham, Wexham Court, Slough, Bucks.

DORKINGS (Coloured).—First, R. W. Roberts, Trevol, Cornwall. Second, J. K. Fowler, Prebendal Farm, Aylesbury. Third, E. Burton, Truro. **GAME (any variety).**—First and Third, Rev. G. S. Cruwys, Tiverton, Devon. Second, R. R. Sewell, M.B., Bridgewater, Somerset. Highly Commended, E. Burton, Truro, Cornwall. Commended, E. Burton.

COCHINS (any variety).—First, H. Tomlinson, Balsall Heath Road, Birmingham. Second, J. K. Fowler, Aylesbury. Third, T. Stretch, Marsh Lane, Bootle, Liverpool. Very Highly Commended, Mrs. B. J. Ford, Countess Weir, Exeter. Highly Commended, H. Benbow, Ham, Surrey; Mrs. Everett, Gibraltar Cottage, Monmouth (Partridge). Commended, Mrs. Everett (Buff); E. Pigeon, Lympstone, near Exeter, Devon. (The whole class excellent.)

HAMBURGH (Golden and Silver-spangled).—First withheld. Second, Mrs. Pettat, Ashe Rectory, Overton, Hampshire. Third, E. Pigeon.

HAMBURGH (Golden and Silver-pencilled).—First and Third withheld. Second, Sandford & Elliott, 5, Windsor Villas, Plymouth.

POLANDS (any variety).—First, E. Carlyon, St. Austell, Cornwall. Second, Mrs. Pettatt, Overton, Hampshire. Commended, E. Burton.

BRAHMA POOTRA.—First, J. H. Craigie, Woodlands, Chigwell, Essex. Second, G. Botham, Slough, Bucks. Highly Commended, J. K. Fowler, Prebendal Farm, Aylesbury.

MALAYS.—First and Second, C. Ballance, 5, Mount Terrace, Taunton, Somerset. Highly Commended, E. Burton, Truro, Cornwall.

MINORCAS.—First and Second, J. Bickoll, 4, Portland Cottages, Plymouth.

ANY OTHER DISTINCT BREED.—First, Miss S. H. Northcote, Upton Pyne, Exeter. Second, Lady Louisa Thynne, Muntham Court, Worthing, Sussex. Highly Commended, H. Leworthy, Newport, Barnstaple.

BANTAMS (Game).—First, W. H. Oxland, Laira, Devon. Second, Sandford & Elliott, Plymouth. Third, J. R. Rodbard, Wrington, near Bristol. Highly Commended, R. L. Liscombe, Burleigh House, Plymouth, Devon; Mrs. Everett, Gibraltar Cottage, Monmouth. (Very good class.)

BANTAMS (any other variety).—First, Rev. G. S. Cruwys, Tiverton. Second, Miss G. Everett, Gibraltar Cottage, Monmouth. Highly Commended, R. Everett. Commended, J. F. Mortimer, Mill Street, Plymouth.

DUCKS (Aylesbury).—First and Second, J. K. Fowler, Prebendal Farm, Aylesbury. Commended, F. H. Chubb, Plymouth, Devon.

DUCKS (any other variety).—First, E. Burton, Truro, Cornwall. Second, C. Ballance, Taunton, Somerset. Highly Commended, Hon. G. Howard, Charlton, Malmesbury, Wilts.

PIGEONS.

CARRIERS.—First, H. Holman, Alma Villa, Mannamend, Plymouth, Devon. Second, J. Chalker, Catherine Street, Plymouth. Third, W. Derry, Plymouth. Highly Commended, R. J. Wood, St. James' Wood, Nottingham; J. Hart, 11, Princess Street, Plymouth. Commended, J. F. Mortimer, Mill Street, Plymouth; H. Holman, Alma Villa, Mannamend, Plymouth; J. Chalker, Catherine Street, Plymouth.

ANY OTHER VARIETY.—First, E. T. Archer, Forest Hill, Kent. Second, E. Pigeon, Lympstone, near Exeter, Devon. Third, J. F. Mortimer, Mill Street, Plymouth. Fourth, W. B. Jolly, St. Budeaux, near Plymouth. Highly Commended, J. Gilbard, 7, St. Aubyn Street, Devonport.

CANARIES.

BELGIANS.—First, Mrs. Sandford, Edgcombe Terrace, Stoke, near Plymouth. Second, G. Crocker, 23, Queen Street, Plymouth. Third, G. Hingston, 51, Cobourg Street, Plymouth. Highly Commended, G. Crocker, 23, Queen Street, Plymouth; Mrs. Sandford, Edgcombe Terrace, Stoke, near Plymouth. Commended, Mrs. Sandford.

RABBITS.

FOR ANY OTHER VARIETY.—First, Miss L. Pasley, H.M. Dockyard, Devonport. Second, Miss M. Pasley, H.M. Dockyard, Devonport.

GREATEST LENGTH OF EARS.—Prize, S. Eastley, 6, Ham Street, Plymouth.

BEST NEST OF YOUNG ONES UNDER TWO MONTHS OLD.—Prize, S. J. Eastley, 6, Ham Street, Plymouth.

SWEEPSTAKES FOR SINGLE COCKS.

SPANISH.—Prize, J. R. Rodbard, Aldwick Court, Wrington, near Bristol. Highly Commended, H. Lane, Milk Street, Bristol.

DORKING.—Prize, Lady L. Thynne, Muntham Court, Worthing, Sussex.

GAME.—First, J. R. Rodbard, Aldwick Court, Wrington, near Bristol. Second, W. Rogers, Woodbridge, Suffolk. Third, H. Horton, Albert Cottage, St. John's Worcester. Highly Commended, J. Smith, the Grove, Tagnton, near Gloucester; S. Matthew, Chilton Hall, Stowmarket. Commended, Miss S. H. Northcote, Upton Pyne, Exeter, Devon; Rev. G. S. Cruwys, Cruwys Morchard Court, Tiverton, Devon.

HAMBURGH.—Prize, E. Pigeon, Lympstone, near Exeter.

COCHIN-CHINA (any variety).—Prize, T. Stretch, Marsh Lane, Bootle, Liverpool. Highly Commended, Sandford & Elliott, 5, Windsor Villas, Plymouth.

BRAHMA POOTRA.—Prize, J. H. Craigie, Woodlands, Chigwell, Essex. Highly Commended, J. H. Craigie, Woodlands, Chigwell, Essex.

MALAYS.—Prize, C. Ballance, 5, Mount Terrace, Taunton, Somerset. (Very first-rate bird.)

BANTAMS (Game).—Prize, C. Ballance, 5, Mount Terrace, Taunton, Somerset.

Judge of Poultry and Rabbits, S. Sainsbury, Esq., Devizes. Judge of Pigeons, Dr. W. J. Square, Plymouth. Judge of Canaries, Dr. Cookworthy, Plymouth.

SILVER GREY DORKINGS.

ONE of your observations on my communication calls for a reply. You state, "We looked closely at the prize birds at Liverpool; there was no white in the tail." How our first

authority on poultry could look closely at the pen and not see the white in the tail is marvellous! I will not attempt to meet assertion by counter-assertion, but at once state that I called the attention of the young man in charge of Mrs. Blair's poultry to the fact, and he at once admitted the roots of the sickle-feathers to be white. The white in the tail was also pointed out to two of the Committee (both of them great poultry exhibitors) by one of the most successful breeders of Silver Greys. His statement is, that the sickle-feathers were white 5 inches up, and allowed to be so by the two members of the Committee. In my former letter I stated from 4 inches to 6 inches up; but the bird is, I suppose to be seen, and I have no doubt Mrs. Blair can confirm my statement.

On other points I think we agree—that a cock with a black breast and tail, and light hackle, although he may have a spot of chestnut on his saddle, is preferable to a bird with a dark hackle and free of the chestnut spot, while the light hackle without the chestnut is preferable to either. In my former communication I said nothing about hens. I agree in your remarks about silver hackles. Permit me to add, I think colour should be the prime consideration in Silver Greys, purity of feather being the main point; the next, that the birds should be of fair size, but feather should always be first in importance. —A BREEDER OF SILVER GREYS.

[We differ but little, and your tone is such that we wish we did not differ at all. We are agreed about the points and properties of the breed, but not about Mrs. Fergusson Blair's pen. We still doubt the white feathers in the cock's tail. Our opinions have not changed since the Show; and although we looked critically at the class, we did not see that which we have always considered a disqualification in it. We hope at some time to be in discussion with you, where we shall not be wide as the poles asunder.]

HATCHING SWANS' EGGS.

I HAVE a pair of Swans under my charge. Last year they laid two eggs, but, being disturbed unavoidably, never attempted to hatch them, and they were in consequence spoiled. I have reason to believe I shall have eggs again this year early, and should be obliged for any advice as to hatching, rearing, and feeding the cygnets. Should the mother neglect them, would it be of any use to try hatching them under a hen or Duck? They have a small island in the middle of the ornamental water, but it is small and not thickly wooded. I have a number of Muscovy Ducks there: they lay a great many eggs under the brushwood on the sides, and invariably hatch every egg. Last season I had a great many young Ducks so hatched that grew up with very little trouble and without loss.—J. T.

[The old tradition is that a Swan can only hatch in a thunder storm. They sit nearly two months, and we believe sometimes longer. It is a very common thing for the hen to desert her eggs if she is disturbed, and she dislikes being even looked at. For these reasons she always makes her nest in a sheltered spot. If your island is bare, stick in some bushes, plant some evergreens, and put some thatched hurdles to make a quiet and sheltered spot. Put some straw there, and she will sit well. If the time of sitting be prolonged, do not be tempted to disturb her by looking. The young are fond of meal, bread, lettuce, and crushed corn.]

REMOVAL OF OLD QUEENS—FEEDING BEES NOW.

"B. & W." alludes to old queens which will have to be destroyed this season. I should be glad to know of what standing they are. I conclude they belong to hives which are not permitted to swarm, having been informed that the old queen departs with the swarm, and is replaced by a young one. The reason for asking this question is that I have a hive, a swarm of 1859, which I hope to keep for some time without needing to be destroyed.

My bees were first seen on the flowers on February 25th. I still have barleysugar on the top of the hive, which the bees do not appear to eat now, and I think of closing it in a week's time. No pollen was visible on the bees on their return to the hive.—H.

["B. & W." does not sell hives; but our correspondent will hear from him again should anything occur to induce him to

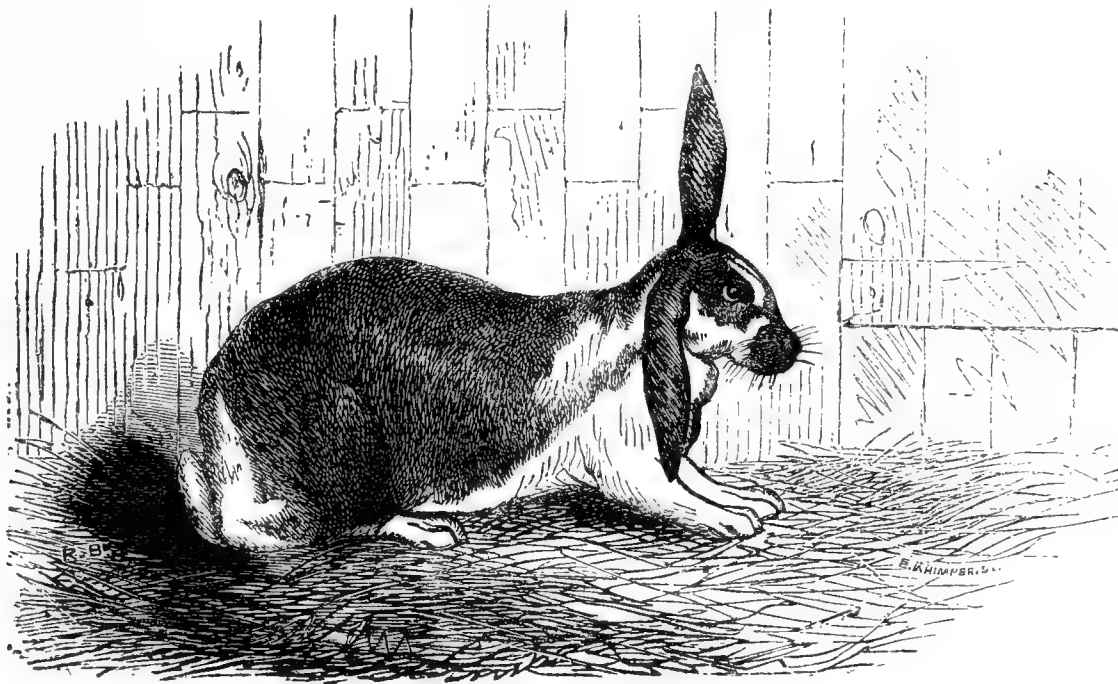
part with any of his surplus stock at the swarming season. The "old queens" alluded to in "B. & W.'s" last communication to THE COTTAGE GARDENER are supposed to be the original queens purchased by him three years ago, when he recommenced bee-keeping, as the hives have not been permitted to swarm. "B. & W." hopes to replace them (some of them at least) with young Italian queens in May or June should these come to hand before his bees swarm. The queen in our corre-

spondent's hive (which hive is a swarm of 1859) will last two years longer in a vigorous condition.

Bees which have not at least 5 lbs. of honey stored in their hives at this time will have to be fed yet this spring if the weather should be unfavourable for getting honey in the fields. "B. & W." will consider it safe to give each of his hives half a pound of sugar syrup (boiled in water) every week for the next six weeks.]

THE RABBIT (LEPUS CUNICULUS): ITS HISTORY, VARIETIES, AND MANAGEMENT.

(Continued from page 359.)



THE HALF-LOP.

THIS, the last variety of the Lop-eared Rabbit, like the other varieties derives its name from the carriage of its ears.

The Half-lop variety may be divided into two classes, and, at least, with some benefit to the young fancier; inasmuch as one variety almost invariably bespeaks impurity of blood, while in the other variety we may find numbers of the highest-bred animals descended from parents of the purest blood and great beauty. It is very difficult to breed a litter of young Rabbits from the most perfect specimens without one or two of them

being of the last-mentioned variety of the Half-lop—at any rate, for some time or until the offending ear be brought to its more proper position by the use of the cap or stitch.

In the first class the Rabbit holds one ear erect, while in the other both fall over one side. In the former case the ear will generally be found deficient in length; while in the latter they will often turn out the longest-eared and best-lopped in the litter.—R. S. S.

(To be continued.)

BEEES IN THE SEASON OF 1860-61.

DEATH OF BEES.—Your correspondent the "DEVONSHIRE BEE-KEEPER," is not singular in his description of the mortality of his bees. All the accounts agree that the last has been the most fatal season for forty-five years; 1816 being nearly similar.

I regret to state that I have been a loser of several stocks, partly, I fear, from cold. On the 1st January we had a partial thaw and a hurricane of wind, which upset the "milk-pan" on one of my best hives, and rain commencing afterwards. The next day a frost of 25° under the freezing-point, and the rain having penetrated the top of my exposed hive, which was a fine swarm of the 18th June, 1860, I found the bees, when the frost was gone, all in a large cluster near the bottom of the combs and out of their usual place. There were a few ounces of honey in different parts of the combs.

HACKLES.—Although I have preferred earthen pans to hackles, yet I am of opinion that if hackles are well looked after, shifted and examined twice a-year, they form a good covering for bees. They must not be allowed to get rotten, but as long as most cottagers use straw hives, they (the hackles), will always be in use, as the poor cannot afford to have wooden fancy hives.

BEEES GATHERING POLLEN.—One of your correspondents mentions some Ligurian bees carrying pollen on the 27th January, five days after the breaking up of the frost! These bees must have had access to some greenhouse, a most dangerous trap for bees, as no flowers could possibly be in bloom so soon. I have only seen the bees twice on the crocuses or Erica carnea, and that within the last week. The worst of greenhouses is, that

bees frequently cannot find their way out, unless the windows are open; hundreds of bees at this season are lost in large greenhouses. My bees were not on the crocuses in my garden until the 16th and 17th February. I am pleased with the cheering account from the "RENFREWSHIRE BEE-KEEPER," who seems to be located in some nice sheltered valley, as his bees were gathering pollen nearly a fortnight before mine. My present situation is exposed and very windy.

COMBS VERY BRITTLE AFTER FROST.—On examining the combs belonging to the dead swarm of 1860 (June 18th), on touching them, not in the least roughly, they all broke off at the top excepting two. This I attribute to the severe frost; but as I have not for many years used cross-sticks in my hive, I began to think that there were good exceptions to the latter-named rule. I agree with the "RENFREWSHIRE BEE-KEEPER" most fully, that in such a season as the last a little more warmth than the mere covering of the milk-pan is necessary. The pan must not be looked on by me as infallible any longer.

"'PAN' curat oves, sed non apes—interdum."*

—H. W. NEWMAN, Hillside, Cheltenham.

GENERAL MORTALITY AMONG BEES.—Nearly all the bees in the south of England have died this year. A person in the New Forest who had one hundred and forty hives has lost every bee.—(Local Paper.)

* "Pan" (the god) takes care of the sheep, but not the bees—sometimes.

BEE-KEEPING IN DEVON.—No. XVI.

APIARIAN DISAPPOINTMENTS—WEAK STOCKS—ENMITY BETWEEN THE LIGURIAN AND COMMON SPECIES—A VAGRANT SOVEREIGN—A DEFUNCT QUEEN AND A CAPSIZED HIVE—A NUT FOR MR. WIGHTON—FALLEN COMB—BREASTING POWERS OF LIGURIAN QUEENS—COMB-BUILDING IN WINTER.

YOUR esteemed correspondent, "B. & W.," having favoured us with a statement of how it fared with his apiary in 1860, I feel that I cannot do better than follow so excellent an example.

The summer of 1860 was to me but a continued series of apiarian disappointments, to which, however, I need not more particularly refer. Ill health and an unfavourable season completely frustrated my attempts to disseminate the Ligurian species of honey bee by artificial means, but at the same time furnished such a store of hardly-earned experience as may very probably insure future success.

The close of the season found me in possession of twelve stocks, ten of which had Ligurian queens. All were well provided with artificial food, but some Ligurian colonies, which had been weakened by queen-rearing experiments, were decidedly deficient in that grand requisite—population. My intention was to strengthen these by adding bees driven from condemned stocks, but two or three abortive attempts soon satisfied me that no good was to be effected in this way. One cost me a Ligurian queen, which was mercilessly slain by the intruders, although their own sovereign had been previously removed, whilst in others the slaughter was so great as entirely to frustrate the desired object. Up to this time I had disbelieved M. Hermann's assertion that there was an especial enmity between the two species; but now I could doubt it no longer, and was, therefore, compelled to let my weak stocks take their chance.

In addition to the dozen I have mentioned, I had a young Ligurian queen in a hive with only a few bees. She had been placed at the head of a good stock, but refused to remain there; and, flying back to the box in which she had been bred, slaughtered a young black queen which I had raised for experiment, and surprised me a few days afterwards when I found her in her old domicile. As she was the last Ligurian I had reared, I rather doubted her being impregnated, and therefore substituted a black queen in the hive for which she was originally destined, and allowed her to remain with the subjects of her choice. Had the winter been mild, she might have survived; but as it was, this hapless little colony succumbed to the severe frost at Christmas.

A more serious loss was one of my two black queens, which I found dead on the floor-board of her hive on the 27th January. I intended uniting her remaining subjects to the next stock; but one of the tremendous storms with which we have been visited saved me all further trouble by capsizing the hive, and involving combs and bees in one common ruin.

Considering that two of my stocks are artificial swarms, made rather late in a most unpropitious season, and that three others (the defunct one being one of these), were made up in the autumn, and consisted entirely of driven bees, whilst all had been tampered with in every conceivable manner during my queen-rearing experiments, I deem myself fortunate in having no more extensive catastrophe to deplore.

Here is a nut for Mr. Wighton to crack, and reconcile, if he can, with his unexplainable theory respecting beeswax. On the 7th of January last—whilst the snow was on the ground, and the frost so bitter that the mercury had forsaken the tube of my thermometer, and coyly confined itself to the bulb—I chanced to observe a number of dead bees at the mouth of my most valued Ligurian stock. Dreading, from experience, the effects of suffocation in such cases, I thought a change of floor-boards the safest and most effectual remedy, and forthwith proceeded to act upon the suggestion which had presented itself. Placing the clean floor-boards by the side of the stock, I shifted the hive with sufficient celerity, believing that the extreme cold would insure acquiescence on the part of the bees. What, then, was my horror and amazement when an entire comb remained on the floor-board* toppling over on one side, and revealing itself thickly covered with bees, whilst numbers took wing and dropped, chilled to death on the snow! On examination I found a patch of sealed brood on both sides of the comb measuring about 3 inches by 4 inches, and affording conclusive evidence of the extraordinary breeding powers of Ligurian queen bees, which exhibited such remarkable activity in despite of so inclement a

* I should state that this comb had dropped on the floor-board some days before I lifted the hive, although I was not aware of it at the time.

season. But what was to be done? I was in the very extremity of bewilderment, and for the moment perfectly incapable of action. As soon as I could collect myself I determined that the comb must be restored to its place at all hazards; and having withdrawn the screws of the crown-board I cautiously slid it on one side, following it with a second board, so that no bees might escape until I could separate the two over the spot whence the comb had fallen. This done, I took out the bar, inserted the comb until it rested on the floor-board, and, having steadied it by the introduction of a few bits of old comb, replaced the bar and the top-board of the hive. I need scarcely add that my vexation was extreme at seeing some hundreds of my little favourites dotting the surrounding snow in all directions.

But, it may be asked, What has all this to do with Mr. Wighton and his unexplainable waxen theory? In reply, I may be allowed to explain that the above-mentioned comb rested on the floor-board of the hive on the 7th of January, and never having been worked down very close, left a space varying from half an inch to an inch between its upper edge and the ragged fragments attached to the bar. I was soon made aware by the waxen laminae which appeared at the hive's mouth that the bees were filling up the vacant space; but it was not until the 8th inst. (March) that I was able to take the comb in my hand and admire the beautiful and effectual manner in which it had been performed. The new work was readily distinguishable from its being formed of new wax, and, therefore, much lighter in colour than the old comb; but the cells were carried out to their full length, and finished in the most perfect manner, so that I could not but be astonished at the skill displayed by these little insects in performing such an admirable piece of workmanship during a season which, by its inclemency, had kept them prisoners within their hive. At what a cost of material this had been effected may be guessed from the fact, that, although the colony was at the outset amply provided with artificial food, a very little remained in store, so that I was compelled to substitute a couple of loaded combs for empty ones, in order to supply their present need.

Whether this fact will satisfy Mr. Wighton, that wax is secreted by bees from either honey or sugar, is of course impossible to say. Taken in conjunction with other facts, experiments and observations recorded by apiarian writers from Huber downwards, it appears sufficiently conclusive to—A DEVONSHIRE BEE-KEEPER.

P.S.—I perceive a misprint in my last article on "American Bee-keeping." The invention of bar and frames should be attributed to the Baron von Berlepsch (not Berlepock), of Seebach, in Thuringia.

OUR LETTER BOX.

POULTRY FOODS (*A Young Amateur*).—We know nothing about them, and have never seen them advertised.

CAPONISING (*A Subscriber for Three Years*).—We cannot give the directions you ask for.

DORKING TOO LARGE TO EXHIBIT (*C. Hughes*).—There is no limit to the size of these birds for exhibition, and we quite agree with you that "they cannot be too large for breeding for the table."

BRAHMA POOTRAS (*J. G. V.*).—They are as good layers and as large as the Cochins—Chinas; in fact, they are only a grey-feathered variety of that breed.

COMB OF WHITE DORKINGS (*H. & M.*).—Some of our authorities prefer a single comb, and others a double one. It is a mere matter of taste; only in exhibiting them the birds in the same pen must be all single-combed or all double-combed. The largest and best-characterised birds would win whether their combs were single or double. Their prices vary too much with their quality for us to quote any.

POULTRY MIXTURE (*X. F. Z.*).—We know nothing about this food; and unless we knew what it was made of should certainly not give it to our poultry.

LIGURIAN BEES—APIARIAN EXPERIMENTS (*W. S., Dunstable*).—We have transmitted your letter to Mr. Woodbury, who first succeeded in introducing the Ligurian species of honey bee into this country, and who, we believe, intends disseminating them by forwarding fertile queens to all applicants, in the same manner as was contemplated last year. Many thanks for your kind offer. We shall at all times be glad to receive particulars of apiarian experiments.

BEE PASTURAGE (*A Constant Reader*).—We cannot do better than repeat the advice given by the late Mr. Payne, as quoted by Mr. Taylor in his excellent "Bee-keepers' Manual." "I have always found the advantage of planting in the vicinity of my hives a large quantity of the common kinds of crocus, single blue hepatica, *Helleborus niger*, and *Tussilago petasites*, all of which flower early, and are rich in honey and farina. *Salvia nemorosa* (of Sir James Smith), which flowers very early in June and lasts all the summer, is in an extraordinary manner sought after by the bees; and, when room is not an object, 20 or 30 square yards of it may be grown with advantage. *Origanum humile* and *Origanum rubescens* (of Howarth), and mignonette may also be grown. *Cuscuta sinensis* is a great favourite with them, and the pretty little plant *Anacampteros populifolium*, when in flower, is literally covered by them. Garden cultivation, beyond this, exclusively for bees, I believe answers very little purpose." We may add that "the neighbourhood of a large town usually possesses an advantage, in the vast number of crocuses and other spring flowers which are cultivated in suburban gardens. *Arabis verna*, now in flower, is thronged by bees."

WEEKLY CALENDAR.

| Day of M th | Day of Week. | MARCH 26—APRIL 1, 1861. | WEATHER NEAR LONDON IN 1860. | | | | Sun Rises. | Sun Sets. | Moon Rises and Sets | Moon's Age. | Clock before Sun. | Day of Year. |
|------------------------|--------------|-------------------------|------------------------------|-----------|-------|-----------------|------------|-----------|---------------------|-------------|-------------------|--------------|
| | | | Barometer. | Thermom. | Wind. | Rain in Inches. | | | | | | |
| 26 | Tu | Scilla. | 29.653—29.586 | deg. deg. | | | m. h. | m. h. | m. h. | | m. s. | |
| 27 | W | Lonicera nigra. | 29.674—29.597 | 49—21 | N.W. | — | 51 af 5 | 21 af 6 | rises | ○ | 5 44 | 85 |
| 28 | Th | Calycanthi. | 29.696—29.617 | 55—43 | N.W. | ·01 | 49 5 | 23 6 | 22 a 8 | 16 | 5 26 | 86 |
| 29 | F | Good Friday. | 29.696—29.617 | 58—43 | S.W. | ·04 | 46 5 | 24 6 | 52 9 | 17 | 5 7 | 87 |
| 30 | S | Hamamelis virginica. | 29.549—29.497 | 60—41 | W. | ·01 | 44 5 | 26 6 | 20 11 | 18 | 4 49 | 88 |
| 31 | SUN | EASTER SUNDAY. | 29.691—29.434 | 55—43 | S. | ·01 | 42 5 | 27 6 | morn. | 19 | 4 30 | 89 |
| 1 | M | EASTER MONDAY. | 29.234—28.640 | 52—43 | S.W. | ·17 | 39 5 | 29 6 | 36 0 | 20 | 4 12 | 90 |
| | | | 29.189—29.053 | 55—35 | S.W. | ·14 | 36 5 | 32 6 | 35 m 1 | 21 | 3 54 | 91 |

METEOROLOGY OF THE WEEK.—At Chiswick, from observations during the last thirty-four years, the average highest and lowest temperatures of these days are 53° and 33.5° respectively. The greatest heat, 75°, occurred on the 27th, in 1830; and the lowest cold, 14°, on the 25th in 1849. During the period 154 days were fine, and on 84 rain fell.

WORK FOR THE WEEK.

KITCHEN GARDEN.

Beans, earth up growing crops, and continue sowing for a succession. *Broccoli*, sow for a main crop. *Cabbage*, sow for a main autumn crop. Fork up the earth between the rows planted in the autumn. *Cauliflowers*, stir the soil around the plants under hand-glasses, and earth them up. Sow for autumn crop, if not already done. *Celery*, prick out the early crop. *Cucumbers*, earth up during dry weather, and give air freely, preserving the heat by fresh linings if needful. *Potatoes*, get in the main crop now. *Spinach*, sow small crops of the Round-leaved in drills, but only a little at one time, as it soon runs to seed. *Tomatoes*, pot off as soon as fit. Sow seeds of herbs and other vegetables that may have been omitted during former weeks. Remove all litter and weeds. Earth up early crops, strewing a little soot about them to prevent the attack of slugs. Protect recently-sown seeds from birds by coverings of net and twine.

FLOWER GARDEN.

Where the soil in flower-beds has become compact, dig it up again for the beneficial admission of air. Give the lawn frequent rollings preparatory to mowing. Protect the Tulips and Auriculas from frost and rain. Finish the planting and alterations in ground work as early as possible; also the pruning of shrubs in the shrubbery and borders. Sweet Peas may be sown in different ways: both temporary fences, as well as ornamental hedges, can be made of them. Make new plantations of double blue and double white Russian Violets; select the strongest runners, but give the preference to seedlings, as they make stronger plants, and bloom more abundantly. Plant out Wallflowers, Sweet Williams, Canterbury Bells, double Rockets, &c., and the different varieties of herbaceous plants—not forgetting *Delphinium formosum*, one of the most showy of them we possess.

FRUIT GARDEN.

Proceed with grafting fruit trees, and protecting the bloom on wall trees.

STOVE.

Increase the heat and moisture, and shade for a couple of hours during bright sunshine in the middle of the day. Make use of the syringe pretty freely, and apply manure water occasionally to the plants that are making their growth.

GREENHOUSE AND CONSERVATORY.

Give air freely all the early part of every fine day, and shut up early to produce an evening warmth. All growing plants advancing as specimens to be frequently examined, and when the roots reach the side of the pot to be removed to a larger one before they begin to mat together. Where Tuberoses are appreciated they should be procured at once, and potted in sandy loam with a small portion of rotten sheep or cowdung, to be then placed in a hotbed or forcing-pit. They will not require water for many days

after potting, and but little until they begin to grow. When they have advanced in growth they may be moved to the conservatory for blooming. Force on Fuchsias where large and fine specimens are required. See that such climbers as Cobæa, Maurandya, Lophospermum, Rhodochiton, Tropæolum, &c., are propagated and cultivated for blanks or trellising, &c. Ipomæas and Thunbergias, being subject to red spider, should be well syringed, to prevent that pest gaining ground. Pay attention to climbers as they grow, to prevent confusion.

FORCING-PIT.

Introduce Roses, American plants, and all other such plants that have been recommended as suitable to keep up a succession of bloom. Cuttings of the young wood of Roses struck now will bloom late in the autumn if they are properly attended to.

PITS AND FRAMES.

Look well to the propagation of bedding-out plants. Sow tender and half-hardy annuals; pot off those already up. Give air daily, and never allow the plants to suffer for want of water. Pot Cockscombs, Balsams, &c.; these do best in a frame with heat from fermenting materials, placed near the glass, and to be well covered up at night. Pot off cuttings of Dahlias, and continue propagating. Put in a stock of Chrysanthemum cuttings for autumn display. Sow choice Ranunculus seed in shallow pans or boxes; cover the seed as lightly as possible, and place them in a cool frame.

W. KEANE.

DOINGS OF THE LAST WEEK.

ATTENDED to ordinary routine operations as far as pelting rains and boisterous winds would permit. In the kitchen garden seized a dry day to sow Parsnips and Onions, the former in rows 15 inches apart, and the latter in rows 12 inches apart, the rows being less than 1 inch deep, and covered them with dry, light soil, containing a little soot and lime. Sowed a succession of Dickson's Favourite Pea. Placed about 9 inches of hot dung in a wide Celery-trench, covered with nice dry soil from the neighbouring ground, and there planted *Potatoes* sprung an inch or two, covering them with similar soil, and sowing the surface with Radishes to come in to succeed the last in frames. Sowed also Radishes for the first time in the open ground, to be protected with spruce branches if necessary. The Celery-trench *Potatoes* will be protected for a short time by Dahlia-stakes being laid across the bed, and a piece of calico about 5 feet wide stretched over them. The calico, some 20 yards long, is fastened at each end by tacks to the middle of a stout pole about 7 feet in length, leaving a place to hold by at each end. These permit of the calico being easily rolled up from either end. Every 4 feet or 5 feet on each side, and opposite each other, a string is fastened with a needle and thread, so that when the poles are made tight at each end, and these strings are also made tight and secured to little stakes put in the ground, the calico is about as free from puckers as an open umbrella. Coarse unbleached calico is used, it soon becomes white enough. Planted out *Potatoes* in the open air, but was stopped by rain. Autumn or even very early planting does no good in our cold soil. Planted also part of the *Peas* that were sown in boxes in

rows 4 feet apart, putting laurel twigs 1 foot in height on each side of the rows, and staking as the work is done to prevent trampling the soil: obliged to stop by heavy rains. Removed all the litter from Celery-beds, and threw it with a few warm leaves in a heap to ferment. Trenched out all the Celery in very fair condition, and put it close together in a trench by itself, in order that the ground might be ridged up, causing the manure in the bottom of the trench to be equally distributed; and pricked out Cabbage, Cauliflower and Lettuce plants in a cold earth-pit, to be protected with hurdles with straw fastened on them very thinly. Pricked out Celery also in the small wooden boxes, and sowed for succession.

Gave up sprinkling Vines in small six-foot-wide pit, as the Sweetwaters are coming into bloom;—may have a syringing when all set, but a good shaking to remove all remains of bloom is just about as well, and after that the leaves get no moisture except what they condense in the form of dew; night temperature 65°, with a good rise from sunshine when it occurs. In a sunny day drew a dry hand gently over the bunches in bloom, which we have found as good a plan as any for dispersing the pollen and causing a regular setting. Peaches are not doing so well as usual. The flowers were in many cases defective, and, though they set well, many refuse to swell and will eventually drop off; find the heart in several getting black—a sure sign that the young fruit was not sufficiently formed. In such a season as the last, the trees might have been better exposed in the last months of autumn instead of the glass being left on. When used to thick heavy crops, very little makes us grumble; but, as I am told to give all minutiae, it is only right that the slightest approach to failure as well as great successes should be recorded, and the reason given as far as possible. Regulated the first vinery, removing all shoots that would not be needed. A Sweet-water will soon be in bloom, temperature from 58° to 65° at night. During the day if the sun will be so kind, temperature from 65° to 85°, giving a little air early, and shutting up early to economise heat; but, for the coal bill, would keep a little air at the top of the house constantly. Removed Strawberries done fruiting, placing them behind a fence with a few leaves packed between the balls, and, if cold weather, a spruce branch laid over them until they are well hardened; the pots always at this season being wanted before they can be had, and these Strawberry plants when planted out in the open ground a month hence, furnishing a fair gathering in the autumn and extraordinary crops the following year. As the shade gets dense, the fruiting plants must be removed to where there is abundance of light to give them flavour. A little sulphur placed on the heating medium is the best preventive in the case of red spider. Cleared three lights of a pit, the same as described for Cucumbers the other week, and when the stiffish loam was heated, planted in it six Melon plants, two in a light. On the whole we find this better than one plant to a light; for, in the latter case, there is more difficulty in getting the requisite number of fruit set at once, and if only one or two take a prominent lead, farewell to the rest doing much. The Cucumbers turned out into the pit heated by hot water, and the hotbed of leaves and dung are both doing admirably; but the latter, though a sowing later, and, therefore, much smaller plants, show every appearance of beating the others. The average temperature at night has ranged from 60° to 65°; but for the last few days it has been gradually falling until it reached 58°. The manure outside the box was, therefore, forked over a foot deep, and more dryish litter packed round to the top of the box. This has increased the top heat sufficiently without adding to the heat below the plants, which is warm enough. When manure is plentiful nothing beats these beds for Cucumbers and Melons. Potted some maiden plants of Peaches, Apricots, Cherries, Plums, &c., into pots, intended to train them as small pyramids, and ultimately fruit them under glass.

As to flowering plants, removed Azaleas, in pit in bloom, to conservatory; also, a quantity of Cinerarias in bloom from a coldish pit, giving those in the house plenty of cold water, and using water heated a little for Azaleas, &c., in bloom. Removed large Fuchsias from first house of Vines to the second, so as to give them full light and less heat. Filled the stage of first house with fresh-potted plants of Ivy-leaved and other small Geraniums just to get them to root a little in fresh soil. Moved pots, boxes, and pans of cuttings from beds and frames after being struck, into cold pits. Turned out semicircular drain-tiles full of fresh-struck Verbenas with the balls entire into light rich soil, with a very slight heat below them to encourage them

to grow stronger in order to get more cuttings, as they must have frequent toppings for cuttings before the middle of May; and put in cuttings of Heliotropes, and almost everything of a bedding character that could be found. Filled the earth-pit under spare sashes with Calceolarias, planted in rows about 3½ inches apart, and commenced with a cold earth-pit, planting out those that were inserted so late in autumn as not to be struck before the severe frost at Christmas, but which are now a perfect thicket, requiring removal; these are covered with calico just as I have mentioned above for the Potatoes, and in a very severe night there will be straw hurdles or loose straw placed over the calico. We have had beds of Calceolarias planted in this way that, having a little water given at planting, wanted scarcely anything doing to them until within eight days of being turned out into beds, &c. Then the cloth would be rolled off for the day to thoroughly harden them; but before that a sufficiency of light passes through the calico, and the rays of the fiercest sun are blunted, and enough of air passes continually from side to side. In very hot days a slight skiff from a syringe might be given; but in weather not very sunny we have had the plants flourishing under such covering as well as could be, and no water given, and no moving of the calico for four or six weeks on a stretch. If any better makeshift plan than this can be suggested, combining economy and utility, I shall be glad to hear of it. Sowed a few flower seeds of the tenderer annuals, as Lobelias, Perilla, &c., and placed the pots under the Vines in the Vine-pit. Will defer sowing the general stock of half-hardy annuals for a week or ten days, as they are much injured when much kicked and knocked about before planting. The last remark applies particularly to such plants as Tropæolum, especially pelegrium, and Convolvulus, Zinnias, and even Stocks, &c. The yellow-feathered Cockscombs (*Celosia pyramis*), was much admired last season, but I failed to ripen a single seed; and the seedsman tells me “not to be had.” Surely some one must have been more successful. My plants stood too long in the greenhouse for seed. Sowed also Capsicums and Tomatoes, but they too would have done in a week or ten days. When room is limited it is not merely sowing, but what are you to do with the seedlings, that must be thought about.—R. F.

GARDENING IN LONG ISLAND, NORTH AMERICA.

“AFTER several months’ absence from home I found much to occupy my attention in gardening matters and comparing my foreign notes with home plantings and experiences, and delayed taking up my usual readings of garden or floricultural magazines, &c., until the winter was fairly upon us with its snows and frosts.

“It was with some surprise, therefore, and much pleasure, that I noticed your kind message with that of Mr. Taylor, in your July Number, wafting across the wide waters an apology quite uncalled for, but which I appreciate none the less, as it is in true keeping with that genuine politeness which seems to distinguish those cunning and loving in garden-craft above their fellows. I should have been much gratified with the opportunity to have gone over the splendid grounds at Shrubland in company with Mr. Taylor; but, aside from the necessity of my return to London on the same day when the bees swarm, other matters must give way to the necessity of looking after their welfare, and this I perfectly understood; besides, I have a tolerably quick eye for effects, and by myself sketched off here and there some ideas well worked out there, which at some future season I hope to reproduce here on a smaller scale. By-the-by, the post of Mr. Taylor can be no sinecure. I was too early to see the beds all planted; but I saw enough to appreciate the labour of head and hands which must be gone through with to carry out the full stocking and arranging of that beautiful park and gardens. This reminds me that those only who have attempted to accomplish any particular effects in gardening can appreciate such effects properly. Especially is this the case in this country, where the examples of high gardening are so lamentably few, although apparently increasing.

“In return for the many hints I am so constantly receiving from your weekly contributions to THE COTTAGE GARDENER, I propose to give you an occasional experience of our own planting; for although our climate varies from yours very sensibly, yet the extremes meet—as, for instance, your winter of 1860-61, seems to have been down to our average of Fahrenheit, and you may yet have a summer which may correspond. And,

first, as to *Spergula pilifera*, in which I see you took much interest. Its hardiness we have tested thoroughly by exposure of all degrees in low grounds, where water from melting snow would stand for weeks freezing and thawing, and completely covered with ice and water, and again on high ground exposed to cutting winds and drifting sand, with a marking of 15° below zero (Fahrenheit). In the latter case the lively green is dulled, but it speedily recovers with the return of spring. But, and alas! our heats are too much for it in sandy districts, especially when planted in very small bits to get up stock, or when pricked out from seed-pans. I live in such a district; and a considerable plot pricked out in early spring last year, and covered from late frosts till well rooted, took hold finely, and covered the ground well, so that on my return in July last it was beautiful and promised well, but with the succeeding month very dry it burnt out in patches, turned brown, and looked a very eyesore. It threw up fresh green again from the roots with the fall rains, but never recovered fairly, and now in early spring looks wretchedly. I shall give it one more trial from well-established plants in pots which may have sufficient strength over the pricked-out young stuff to withstand the summer; but I have but little hope that it will answer on Long Island, although it may possibly do in other parts of the country where clay or loamy soil abounds. So you must expect that with a very hot or dry summer your lawn may disappoint you, although you so seldom are thus affected—so seldom, in fact, that it would, perhaps, be a blessing to the land, and the sacrifice of *Spergula* to the crops would be cheerfully made. It may be, however, that it would be so well established by your generally moist seasons, that an exceptional hot summer would not affect it. But if we lose *Spergula*, what think you of the same heats enabling us to bloom *Victoria regia* in the open ground? This was accomplished last summer, and it will be but a short time now before our enterprising nurserymen and gentlemen can respond to a demand for the blossoms for table and drawing-room decoration whenever called upon, from July to October, and for a few shillings each, when grown for sale. Especially easy is this to be done in the neighbourhood of our large cities where basins and fountains are supplied from the large distributing reservoirs, the water in which with so slow an outward flow becomes too warm to drink without ice, but just the temperature for a steady, warm stream for the noble Lily tribe, of which the *Victoria* is truly queen.

"I think the blooms and leaves I saw grown in this manner last summer exceeded any that I have ever seen in England. The reason (as I judge to be the case) is that *our furnace* needs no cooling, and the temperature is never dependant upon the carelessness or sickness of its attendant, but is regular, and its variation is gradual and slow as the season. So you see the system of compensation rules with us as with you. If we have the heat of the Tropics, we can with a little enterprize enjoy its luxuriant vegetation. And while on the 'topic of the Tropics,' I shall make an experiment this summer, which if successful, would almost entice you to visit us, as there is only a ten-days' run between us now. In the fulness of summer on the shady bank of a pond amidst Ferns and Lilies I shall plunge a large number of *Caladiums*, in the full hope of blazing here and there with *C. Chantini*, *C. Baraquini*, and *C. Belleymei*, with argyrites and *Troubetski* peeping up here and there, among sundry *Begonias* of silver and bronze, with *Cannas* and *Gynurium*, Palms, &c. (not the accursed *Palmetto* with its rattle-snake accompaniments). I have the plan and the place already, and I can see it in my mind's eye alive as a tropical scene of beauty. Leaving out the alligators, will it not be worth seeing and trying for? I have a large quantity of propagating going on now for this especial purpose, and the result will, I hope, be a success, especially if I can manage the *Victoria* among them. It will be the first trial here that I am aware of, and if you would care to know how it turns out I will write you again. [Pray do and often.]

"My propagator has been very successful with the new bedding *Geraniums*, and, thanks to strong plants sent me by your old friends, the *Hendersons*, of Wellington Nursery, and *Lowes*, of Clapton, I shall have some thousands or so to start the beds with this season, and I hope to have a fine show in a moderate way. Golden Chain promises finely as a distinct edging variety, but we dare not trust it to our full sun, which burns up the variegated sorts. I shall try some of the new variegatas, however, in the full glare, in the hope to strike upon a sort that will bear it. I have for such purposes started an "Experi-

menta'" of my own for trials of all sorts, and a pretty mess I expect it will look—but it is hid from observant eyes.

"By-the-by, a package has just come to hand, a present from Hong Kong, of sixty varieties of flower seeds, all in small porcelain jars. The varieties all per list in Chinese characters (much good to me truly); these will have a corner, but not much trouble I assure you, for I presume your collectors have supplied us long ago with all desirable novelties. I have not forgotten the tasteful examples which I had the pleasure and privilege of seeing in the Surbiton Experimental Grounds; and as our climate is again unfortunately against the culture of Ivy, I have improvised a substitute for the Ivy baskets for the lawn, and shall use an Ivy-leaved plant which grows very rapidly, and roots from the cuttings as easily as *Verbenas*, and bears no flower, which is just the thing. It bears the name here of German or Parlour Ivy, leaf light green, and not hardy. It is Ivy, however, and I can find no one who can name it; but I think it is of the *Maurandya* species. It will grow 20 feet in a season if wanted, and stand any quantity of heat, and last summer completely enveloped the rough trunks of some old Locust trees on my place, by the aid of something to cling to. Do you know it? [Yes, it is *Ipomœa hederifolia*.] A botanist on whom I rely calls it *Bryonia*, but it does not accord with the description of that genus. I have twice imported the *Gazania splendens* from *Hendersons*, but lost it both times on the way, and they write me that it does not seed; yet *Carter's* catalogue just to hand offers seed for sale. How is this? [Probably it seeds in Italy.]

"And now, lest I forget it, let me add my testimony about *Caladium Belleymei*. This I consider the finest of all the tribe, and, aside from the *Alocasia metallica*, which I never look at without an exclamation of wonder at its 'exclusiveness of style,' I consider this *Caladium* as remarkably interesting for its *inconstancy*. A large plant now in my stove with sixteen leaves averaging from 6 inches broad to 15 inches long, no two leaves are alike, varying from pure delicate white ground to light green with pink spots, and dark green with white spots, and each beautiful and distinct enough for a separate variety, and in twenty different plants somewhat smaller all partake of this change. It is a great acquisition.

"I trust no serious damage has arisen to the English gardens from the excessive cold which I read you have experienced this winter; but I am really glad of it on one account, as we seldom in this latitude read the Fahrenheit lower than you have marked it this season, and we shall now know how to import the glorious *Rhododendrons*, in which you so revel; for all the varieties which have withstood the winter with you will doubtless do well enough here, where but few of those formerly selected have survived, and I shall look with much interest for the list.

"The title of 'American Garden,' which you gave to those splendid banks of *Standish* and *Waterer's* blooms, seems to us natives a misnomer, as we have nothing of the sort here except under glass, and the few native hardy varieties which we possess would be thrown on your rubbish-heap. I look upon it as a very undeserved compliment to talk of those splendid plants as Americans. Just give a hint to some of your nursery friends to tally the hardy kinds for us, and I doubt if they can begin to supply the demand which they will have for them from this side."

"I find that I am spinning out too long a yarn for an amateur to a professional so learned in the law ('of nature') as your good self, but it occurred to me that you would not object to hear of the practice on this circuit; and if any of the hints prove of value, pray use them, and remember that you last summer 'cast your bread upon the waters,' and it has floated back in this shape after a long voyage."—B. C. T., *New York*.

THIS is a highly interesting communication from an American amateur at New York, who is a good customer to some of our nurserymen in London, and who travelled here and on the Continent last summer, but was too early in the season to see the effects of our bedding-out system. Of all the large gardens he had seen in England he was most struck with *Shrubland Park*.

The plan he mentions for flowering the *Victoria regia* out of doors in America, and that for his own experimental garden, should stir us up in our old favourite pursuit of trying our spare plants from the stove and greenhouse out of doors in the summer. And as we

cannot command natural bottom heat for such experiments like our friends in the far west, we ought the more to adopt some of the suggestions about geothermal cultivation which have stood on our books for the last quarter of a century, and are now again revived by M. Naudin's, (of Paris), pamphlet on that subject—to every syllable of which British gardeners would put their seal and signet, save the one clause by which the French author would heat the borders from below to keep the frost from the plants growing on them and rudely protected over them. Perhaps a few lessons from Paris and from New York will be the means of stimulating us on in the good work. But Mr. Weeks has done more than his part already. His one-boiler system should be sufficient to heat one acre on the geothermal or underground plan; and he has flowered the *Victoria regia* in a pond out of doors; and he loosed one of the hardest knots in our domestic botany when he bloomed for the first time in Europe the then *Acrostis sinuata*. The Ivy-like plant mentioned above is much used in Germany and Russia in the same way as our correspondent proposes to employ it in New York, is a native of South America, and was amongst the first contributions from the new world to our gardens. It was figured by old Plumier in some of his works; and soon after that some dusterswivel of Fatherland charmed it with the evil eye, and it has never flowered since. In 1837 I had five or six new hothouses to cover with climbers to shade Orchids, Camellias, and Primroses; and not knowing a faster-growing plant, or one which was at home in the stove, in the conservatory, and in the cold pit than the German-Ivy plant, I gave orders to Mr. Low, of Clapton, to get me over some plants of it. He did, and all my glass was soon shaded with the best of all shading—a light green. In like manner it served my first turn at Shrubland Park till flowering climbers drove it from the wires. Since then I lost sight of it till, some three or four years since, some of Mr. Walton's family were up the Rhine and brought over cuttings of it, and the plants stood on a back shelf over the Waltonian Case ever since. It is the Ivy-leaf *Convolvulus*, or *Ipomœa hederæfolia*, the fastest-growing plant in a moist stove heat I ever saw. It would soon cover a conservatory also, if it were planted in a rich border, and the same treatment as for Tom Thumb will keep it safe enough in winter. It roots faster than a Willow or sooner than a Strawberry-runner if a joint touches the soil, and, no matter how or where it is grown, no insect troubles it. But then, after all is said, that spell is yet on it, and no art of man can make it flower in England. It will be invaluable as a summer Ivy in America, and many parts of Australia, and similar climates. Pray let us often hear from the Experimental on Long Island.

D. BEATON.

CULTIVATING MIGNONETTE IN POTS.

HAVING many inquiries from different people as to how I grow my Mignonette for flowering in pots, I write to state that, in the beginning of September I raise some young plants, self-sown, with a good ball if possible; if small plants that are self-sown are not to be had at that time, I take some from seed sown at the latter end of July or the beginning of August—those from the open ground will do.

This plan I prefer, because the plants are stocky, which is one of the most important things to watch through the whole of their growth. If they are allowed to draw they never will bloom well.

My compost is strong turfy loam, with decomposed Mushroom-bed, and a little sand in it, and a moderate drainage. Size of pot six-inch.

I beat the soil firmly into the pot, and place only one plant in a pot, and not to be shifted.

The potting done, I place them in a cold frame, kept close till the plants begin to grow, then I give air, and in a short time place them in a greenhouse on a shelf near to the glass, and

where they will have plenty of air, and water occasionally as they may require.

They will not need moving from that shelf till in flower, and then only to put sticks to them.

A little weak manure water sometimes while flowering is very beneficial. The plants will be in flower during February, March, and April.—W. WRIGHT, *Gardener to Sir H. G. Cotterell, Bart., Garmons.*

[You have done the planting entirely to our liking in the plan you enclosed, save the front row of variegated *Alyssum* which will not do at all save for a shift, till you can get enough of Flower of the Day *Geranium* to take its place. The reason is the great difference in height between the first and second rows, even if you train down the second, which would spoil the balance between the second and third rows.]

NEW BOOKS.

THE ORCHARD-HOUSE.*—We have so frequently had occasion to notice this excellent work of Mr. Rivers', that nothing is left us to do on the appearance of a new edition but to call attention to the new matter that has been introduced. Much has been said of late about what is called "geothermal culture," but which Mr. Rivers with a greater appreciation of good Anglo-Saxon calls "earth-heat culture." In speaking of the effects of securing the application of earth heat, he says:—

"I have now, however (February 1860) [qy. 1861], the great satisfaction of stating that Orange and Lemon trees and Camellias may be grown in pots in any common orchard-house without fire heat, by the very simple method—and how simple are all good gardening practices—of taking advantage of earth heat (terrestrial radiation), which is done by laying the pots on their sides on the earth-borders of the house in November or December, but not till the approach of severe frost, and covering pots and trees first with mats treble in thickness, and then with a coating—say 1 foot thick, of dry refuse hay, leaves, or straw, giving the plants some water before they are laid down. If the weather should be mild in the winter months, as it often is, the covering, which is easily removed, may be taken off and replaced as soon as frost approaches, and suffered to remain on even if the frost lasts some weeks. About the first week in March, if the weather be mild, the Camellias may be placed upright and have water, as their flower-buds will be swelling, they will then bloom all through April; some of their flower-buds may, perhaps, drop off, but not to any extent, for the plants will be in a better condition than they often are after being wintered in a greenhouse exposed to heat necessary to keep out frost, and, consequently, to a dry atmosphere.

"Towards the end of the month of March, or earlier if the season be mild, the Orange and Lemon trees may be placed upright and have water, which should be given sparingly the first fortnight. They will then blossom and bear their fruit in the house all the summer and autumn. If any sudden severe frost should occur in March or early in April, all the trees must be promptly laid down and covered with mats till it has passed. The radiation of heat from the earth is so constant and powerful, that when thus intercepted by a thick dry covering, no fear of injury even from the most severe frost need be apprehended. I write with confidence on this subject, having for many years kept tender evergreens in pots from frost, by merely laying them down on the soil in the open air and covering them with mats. The application of the system to Orange trees in orchard-houses is, however, an idea only a few days old, and was brought to mind by the following incident.

"On the 19th of December, 1860, the frost became severe, and some young Lemon trees for stocks which it was thought would not be wanted, and, therefore, not housed, yet too valuable to be thrown away, were covered with mats two or three thick, and then with a coating of straw. On the 21st there was a considerable fall of snow; they were forgotten and not uncovered till the middle of February. On taking off the mats and straw the leaves of the greater part were found to be discoloured, but their stems and roots all alive and fresh, although they had

* *The Orchard-house, or the Cultivation of Fruit Trees in Pots under Glass.* By Thomas Rivers. Ninth Edition, enlarged and improved. London: Longmans.

been in moisture and darkness for two months and lying on a cold clayey soil fully exposed to the north-east. Reasoning from this, I feel no doubt but that Lemons and Oranges may be grown in pots, not only in cold orchard-houses where they will be cultivated by thousands, but also trained to walls with southern aspects, the pots being plunged and taken up annually early in November, then laid on the surface in a shallow trench at the foot of the wall, and parallel to it, and covered with mats and straw in frosty weather, uncovering them during the winter in continuous mild weather. About the first week in May, unless the season be unusually late and cold, the trees may be raised and trained to the wall, the pots being plunged, as in the preceding season, following the same practice annually. I have used the small 'Petersburg mats' for covering, as they are more closely woven than the large mats, but some other material will, doubtless, be found, such as thick painted canvass, or, perhaps, some thick and cheap woollen fabric, so as to retain and thus take full advantage of earth heat, hitherto so little thought of, although well known to exist."

EXHIBITION OF FORCED HYACINTHS.

MESSRS. CUTBUSH AND SONS, HIGHGATE NURSERY.

FORCING Hyacinths, like growing Cucumbers in winter, does not depend nearly so much upon the nature of the winter as upon the practical experience of the manager. I recollect the first turn of the fashion for having Cucumbers the whole winter, and I know that some first-rate gardeners were excelled in the winter-forcing of Cucumbers by a set of "Cucumber growers," many of whom could scarcely write their own names, or even read them if they were written in a different hand. And down about Ipswich it is not considered safe to trust a young man with a pair of their sorrel horses, or hardly to get married, until he has shown his fitness for such responsibility by his practice on the Cucumber. Although the Hyacinth, above all other flowers, may be forced during a very severe winter, and come out of the ordeal in first rate style of bloom and leaf, there are yet but very few indeed who can attain to the mark—a fact which is just being proved at the March Meeting in the Botanic Gardens, Regent's Park, at the very time I am writing this about it.

But, lest it should appear to the slowcoaches that I put more stress on the practical experience of clever men in our calling than on their education, allow me to say that Mr. William Cutbush could as easily construe every verb in the *Æneid* as he can force all the Hyacinths in his own catalogue. I only doubt the power of the *Æneid*, the *Odyssey*, and the *Iliad*, when they are crammed into shallow heads, or are confined there by extra thicknesses of the skulls; and when either of these crowns a man, the more you educate him the more cruelty you compel him to bear on his journey through life:—he can never force Hyacinths as they ought to be forced, although he may be able to tell you the reason of his bad luck if you would but believe him. But the power of education on the brains of a naturally clever man, or even on ordinary men of sound practical experience, is great indeed, and greatest when it prompts him or them into the lists of public competitions for practical skill. Sell all your bulbs, if good luck will have it so, but never lose the chance of the lists as long as there is a bulb in Holland, for that seems to be the creed of Mr. Cutbush and of most nurserymen. Sell everything that will sell, and enter the lists on the same level with your customers, and if you get beaten it shows that you have dealt in a good article, or if you take the prize you stimulate the rest to increased exertions. We shall, probably, have many Hyacinths at the next meeting of the Floral Committee, but the 26th of March is rather too late for nurserymen's competition in forced Hyacinths, seeing that Mr. Cutbush has kept from the beginning to the 12th of March for opening his show of them, and, of course, will sell them all before some others are in the market with them.

This exhibition of forced Hyacinths is much more interesting this season than hitherto—not so much from the increased numbers of bulbs and kinds, as from two new and distinct features which are carried out most admirably in detail. The one is a representation of a ribbon-border all made of Hyacinths on a classical model, one-half *Bucolic*, and one-half *Georgic*, at and across the top end of the Exhibition; and the second is a happy idea of growing so many of the finest sorts in water in Tye's registered opal and most beautiful glasses, or bottles rather, for these are more in the shape of fancy bottles for per-

fumery than the rigid cones and cups of the old races of Hyacinth glasses.

Well, there is a neat bracket under every rafter, and against the uprights of the front sashes, on which are placed some of the finest specimens of Hyacinths in these beautiful new bottles, which look more like chinaware than like glass, and these Mr. Cutbush sells as well as the "roots" in them, or without roots. These drawing-room ornaments—and they are so in the full meaning of the phrase—are figured this season in Mr. Cutbush's catalogue; and you have only to imagine these shapes to be of like substance with the finest vases from the palace of the Emperor of China, and as variedly ornamented, and there is a Tye in earnest, a tie to know which is the best-looking—Miss Burdett Coutts, Sir Colin Campbell, or Tye's ornamental glasses.

The ribbon-border arrangement of common bedding Hyacinths is in seven rows. Two rows of two shades of blue, two rows of two shades of red, one row of the purest white, one of blush white, and one of very deep blush or light rose, and all packed in moss like the rest of the Exhibition. If I were a duke or even an earl, and was giving a large dinner party in London, I would engage so many Hyacinths for the evening, and stipulate for the colours to be kept separate in placing them in groups against the walls. I would put the dark blues and mauve purples in the back row, then the deep blush or light rose next the blue, then the scarlets, and crimsons in front of them, making three rows; the fourth row would be of light blush flowers in front of the scarlets, and a fifth or last row in front would be pure ivory white; and if each of these rows were only one yard long, any lady of rank in the three kingdoms, or any gentleman with his eyes tutored for colours, would find more real enjoyment from the effect than she or he could experience from five hundred Hyacinths placed in the mixed style, or on our old herbaceous-border or Tulip-bed style of planting. So much depends on massing colours, and rendering them pleasant to the eye in combination and contrasts. A long border or a circular bed of any size over 4 feet across could be planted better than I placed them for an evening party, because you might have three shades of blue in the centre of the circle, and two rows—one of rose and the other a blush between the blues and the scarlets. Then there might be two rows of creams or scarlets—that is, one row of crimson scarlet, and one in front of it of pink and scarlet, then three rows of light in front, two shades of blushes, and a pure white in front.

These bedding Hyacinths are, of course, the very cheapest that can be bought in quantity; but as no one that I am aware of has yet taken up the subject of planting them in beds according to the colours, it would be of little use to give the names. However, if any one asks for the names for that purpose, I shall most willingly give them, and also the proper way of preparing the beds for them, and how to plant them in more ways than are here indicated, for that subject has been familiar to me for many years in my own practice.

This collection with Mr. Cutbush consists of over one thousand pots set up for exhibition, and the sight is well worthy of a ride up to Highgate to see them from any part round London. Like many other popular flowers, there are too many sorts of Hyacinths, and it will be a welcome day to purchasers when some one will undertake to grow and exhibit the very best kinds in large masses, and merely growing a few of the very commonest kinds, and of the newest and high-priced sorts. The following are the very best sorts of each class of single and double kinds, and of the classes of colours; but the shades of blue, purple, reds, and blushes vary much more than the names of the classes will fairly cover.

Beginning with the highest colour and double flowers, we have in *Double Red* Duke of Wellington as one of the very best, a deep red blush or pale rose; a beautifully brilliant spike of large, well-arranged bells. *Koh-i-noor*, a bright salmon, fresh as from the Beaulieu river, and one of the very highest priced. *Noble par Mérité*, a new light rose, and of the best points. *Princess Royal*, rose, and striped with a deep pink line in the centre of each lobe. *Susannah Maria*, a fine, large, rosy salmon flower. *Waterloo* and *Bouquet Tendre* are the two best bedding double reds.

Single Red, a very rich class, of which *Amy* is certainly the very best and brightest. *Florence Nightingale*, pale pink; *Lina*, bright crimson; *Milton*, deep shaded crimson; *Mrs. Becher Stow*, deep rosy pink; *Norma*, a splendid pink; *Queen Victoria*, two shades of bright red; *Robert Steiger*, a splendid crimson; and *Solfaterre*, an orange scarlet, are all of first-rate

merits in their shades, their bells, and their spikes; and the following are only one point below them in the eyes of first-rate judges—*Aurora Rutilans*, dark red; *Cavarence*, salmon, striped with rose; *Circe*, much after the last; *Cosmos*, rosy pink; *Johanna Christina*, pale rose, and salmon stripe; *La Joyeuse*, fine salmon; *Lady Sale*, deep red, and purplish shade; *Mdlle. Rachel*, deep red also; *Mons. Fesch*, pinky, changing to scarlet; and *Von Schiller*.

Purple Lilac, or nearest to mauve, *Prince of Wales* and *Honneur*, the two best; *l'Unique*, purplish-mauve; *Hydra*, lilac mauve, and quite new, the two next best; and *Dandy*, which is more of a bronze. In deepening the centre of a group, or the back row on a border, these mauve-tinted kinds should stand between the dark blues and the very black kinds in the centre or at the back. And of these Blacks, *General Havelock* is the very best and the very finest *Hyacinth* ever seen. *Prince Albert* is the next best black sort, but with much less purple in it.

Among the *Double Blues* *Sir Colin Campbell* has taken the lead over old *Laurence Coster*; but the two are different in the shade of blue, *Sir Colin Campbell* being the lightest. Another one called *Paarlboet* is also very good; and so is *Bloksberg*, a very cheap, fine, marbled blue flower.

Single Blues are just as strong as the single reds, and most magnificent spikes most of them have. *Baron van Tuyll* is still the favourite of them at the *Experimental Garden*, and the best of them for rows of blue in a ribbon. But the ladies there have not seen them all in bloom. *Argus*, *Grand Lilas*, and *Couronne de Celle* are my own three greatest favourite blues. *Princess Alice*, the next to *Argus*, is very fine; it is a better flower and a finer spike, but wants the white eye of *Argus*, which rivets the eye of fancy the moment it is seen, and there is a great sale for it. *Orondates* is a first-rate porcelain blue, and *Charles Dickens* stands next to it in point of merit, and *Porcelain Sceptre* is not much behind either; while *Blue Mourant* is the darkest blue and the cheapest blue for bedding by the hundred; but *Baron van Tuyll*, *Charles Dickens*, *Grand Vidette* (azure blue), and *Porcelain Sceptre* are nearly as cheap, and all of them fine for bedding.

There is no improvement in *Yellows*, and only two shades of yellow that are really good—that is to say, *Anna Carolina* (a primrose yellow on a prime spike) and *König van Holland* (creamy yellow) after the tints of some *Belgian Azalea*.

Double Whites are not strong in numbers, nor very striking in bells; but their spikes are more like *Covent Garden Asparagus* than the genteel standards on which the single beauties hang up their charming colours. The best double white is still *Prince of Waterloo*, *La Tour d'Auvergne* the next best, and *La Deese* nearly as good.

Single Whites.—Here is where the front rows for the ribbon-border must be looked for, and here are the best three pure whites for that or for any other purpose—*Madame Van der Hoop*, *Grande Vidette*, and *Victoria Regina*. The two latter are the cheapest on the roll, and the two placed alternately in a single row would very much help each other, as *Victoria Regina* shines with a waxy lustre, while *Grand Vidette* is white as the driven snow without gloss. *Alba maxima* is a new one, very large, and opens with green tips. *Elfrida*, a beautiful creamy blush; *Grandeur à Merveille*, pale blush; and *Miss Burdett Coutts*, a deep blush, are three most beautiful in three distinct shades of blush, which would make the second row behind the pure whites, unless, indeed, the price of *Miss Burdett Coutts* would keep it from the other two which are cheap enough. *Gigantea*, a peculiar flower of a deep blush colour, very fine. *Lord Granville*, another peculiar flower with long footstalks to the bells of deep blush. *Orondates*, an old favourite pure white; and *Seraphine*, a pale blush, finish my selections. But we have forced *Tulips*, of which many more have been forced than usual for this Exhibition.

The yellow *Van Thols*, and yellow *Pottebakker*, were the best-bloomed flowers I ever saw so early in the season. You could hardly distinguish them from out-of-door flowers, and my old favourite *Canary Bird*, the oldest of all yellow *Tulips* as far as I recollect, was equally good. *Prince de Ligne*, the latest of the yellow *Tulips*, was here put as early as the rest. The scarlet *Van Thol*, *Cottage Maid*, a rosy pink marked with white stripes, and *Standard Royal*, white and crimson, were the three gayest; and *Vermilion Brilliant* was the richest of one colour. Among the double *Tulips*, *Imperator* seemed an improvement on the old *Rex Rubrorum*; *Tournesol*, red and yellow, as good as ever; and a new yellow *Tournesol* was first-rate. It seemed to be a sport

of the old one in which the red turned to orange, the rest of the flower being clear yellow.

The large back stage was filled with gay flowers, as *Camellias*, *Dielytras*, *Cyclamens*, *Azaleas*, *Rhododendrons*, *Heaths*, *Epacris*, *Cytisus*, *Monochætum ensiferum*, and *Æschynanthus Boschianus*, *Daphne rubra*, *Fairy Roses*, *Mignonette*, *Deutzia gracilis*, *Aphelexis humilis*, *Geraniums*, *Narcissus*, *Primulas*, and *Cinerarias*. Then there were hanging-baskets all along from the rafters, and these were mossed and filled with *Cytisus*, *Cinerarias*, *Tulips*, and *Crocuses*; and there was a front row to the exhibition-stages filled with double white, double purple, double crimson, double yellow, and double lilac *Primroses*. The purple and crimson hardly for sale, and the yellow is primrose or straw colour, and that was the first time I had ever seen it, and they would not let me have it for love or money. But of the double white and double lilac they have bushels, as we say in the country. In this front row were some fine *Crocuses*—and *versicolor* among them, which I thought was lost, as I had not seen it these twenty years. I went all over their bedding plants, and found no end of *Tom Thumbs*, *Lady Middleton*, *Lady Plymouth*, *Alma*, *Brilliant*, *Flower of the Day*, *Beauty* (a deep rose), *Mrs. Lennox*, *Golden Chain*, and *Lizzie*. *Verbenas* also by the thousand, *Calceolarias* ditto; *Lobelia speciosa*, *Variegated Alyssum* and *Cerastium* the same; the double yellow *Chrysanthemum regale flore pleno*; *Tritoma* and *Tritonia*, with *Vallota purpurea* for cottage front borders, and to be daily watered; *Tropæolum elegans* and *Stamfordianum* (the only hitch in the latter is, that it is the same colour as *Tom Thumb*, which is neither a fault nor misfortune where there is room and to spare); *Uniques* and *Quercifoliums*, sweet-scented; and *Cutbush's Citriodora*, (the latter one of the best to mix in nosegays); a large stock of the white *Intermediate Stock*, or *London Stock*, with white flowers; all the best *British* and *Foreign Phloxes* out all the blessed winter and safe as *Crocuses*; *Pelargoniums*, *Fancies*, *French Spotted* in enormous bulk; and in a stove at the end of the range, fancy *Begonias*, *Ferns* and fine-leaved plants, as *Cyanophyllum magnificum*, *Marattia cicutæfolia*, a Palm-like Fern, and a match pair of *Blechnum braziliensis*, and *Didymochlæna pulcherrima*. In another place lots of *Campanula garganica*, an old friend, frail as *fragilis*, the next best creeping, deep blue *Campanula*.

Out in the open ground the frost has been more generous than in most places, the stools and the young yearling stock of *Bays*, and the *Laurustinus* of the same stock and substance, being the only things killed to the ground. *Standard Bays* stood it well, having only singed part of the leaves, and it was interesting to note one row of standards with clear stems of 5 feet at one end, and graduating down to three-foot stems at the farthest end of the row. The degree of singeing went exactly in the same scale as the heights of the plants, the highest being hardly touched.

Roses much scathed; but no *Conifer* is killed save the *Cupressus funebris*, and 5 yards from the three dead plants of it are others not scarcely browned at the tip of the leaves. An injured *Pinus insignis*, and this funereal *Cypress* in the *Experimental Garden* here, from the October frost of 1859, have not had a leaf browned this winter; and many *Laurustinuses* 5 feet or 6 feet high in *Surbiton*, have only a few leaves browned, and some none at all—so that a low, sheltered place on a dry sandy or gravelly bottom on the south side of the *Thames*, is as safe from the ill effects of the frost of last Christmas as this nursery of *Higgate*, the highest, or if not so, the most exposed nursery in *England*. On the highest point in this nursery a *Wellingtonia* is as safe as a *Scotch Fir*, and grows much faster, being now, by the measure of my umbrella, over 8 feet high, and as much through the bottom branches, with a stem at the surface of the ground thick as that of a *Scotch Fir* of double the height.

The *Prince of Wales Raspberry* is still in active demand, and in the rich, yellow loamy soil here it grows strong enough to form a hedge against cattle. I never saw such canes, and they say the fruit is of the very best.

But how is it that all the old stools of *Bay* have been killed to the ground here (*Surbiton*), and the *standard Bays* escaped close to them? Or, how can we account for the *Cypress* from the *Vale of the Tombs* having been killed in one spot, and in the next spot to have escaped entirely? But the reason why I ask the question is this: A friend of mine has just hit upon an easy way of accounting for such deaths, and for such escapes from frost in the same species, by supposing that a species—say a *Scotch Fir*, is hardy or less hardy, or altogether tender in a colder climate, according to the range or region it occupies in its own climate of *Scotland*; for the whole of the highlands of *Scotland*

were once one vast primeval forest of Scotch Firs, save the peaks and ridges, and some of the very steep declivities of the mountains. The forest of Braemar to the right of Balmoral is the last remains of that forest. And the question is this, Would the Scotch Fir from the seeds ripened on the heights of Braemar be more hardy in the north of Canada, or by the river Lena, towards the farthest-off side of Siberia, than Scotch Fir from seeds ripened at Stirling Castle, or in Cornwall? Here is a knotty point, and the old English Oak would answer my purpose better, for the Oak of the Highlands is no whit more hardy than the same kind of Oak is on the Apennines. But the Scotch Fir answers better for the philosophy of my friend, for the Scotch Fir of Braemar is a very different and superior kind to the common low-country variety of the same kind of Fir. Now, the kind of tree with which my friend explains how the nature of one species may differ from the nature of other individuals of the same is the *Araucaria imbricata*; and unless we can find out that there is a different variety of it, as there is known to be of the Scotch Fir on the flank of the Grampian range, depend upon it my friend has climbed too high up in the mountains for his "selection" at all events.—D. BEATON.

GROWING AND FORCING LILY OF THE VALLEY.

"Can THE COTTAGE GARDENER tell the secret of the way to grow Lilies of the Valley, that they may bloom as profusely as those at the Crystal Palace?"—B., *Croydon*.

WE have not seen the plants at the Crystal Palace, but presume they are there now, and therefore forced into bloom. There is little difficulty in getting good pots of this general favourite in the early months of the year, provided you have a good stock out of doors to go to for filling your pots. This plant, however, out of doors has a way of its own. In some places it will become next to a weed, taking possession of shady woods and of sunny borders; and in some other places hardly any coaxing will make it grow vigorously at all. In general, a rich, deep, sandy loam suits it best; and where it flourishes naturally in the place, the common soil, with a little addition of leaf mould and silver sand, will bloom it to great perfection in pots.

In making a plantation out of doors the aspect is of little consequence, though, if I have a prejudice, it would be for the north-west. After digging and airing the ground, the roots should be spread over beds about 3 inches apart, and then covered 2 inches deep with rich soil, in which very rotten dung or leaf mould forms the chief part. The planting is best done in March. These will require watering several times if the summer is dry, and will produce pretty well in the second year. After ten years it would be well to make new plantations by dividing a portion and fresh planting. From such beds the plants must be selected for forcing.

Six-inch pots are generally used. These are well-drained, and are filled to within 3 inches of the rim with rich sandy loam and leaf mould. The roots are then carefully taken up with the fork, and if in large pieces they are shaken or parted separately; and then you select the roots with the best buds, and put them very thick on the soil in the pots—so thick that the buds stand about an inch or a little more from each other according to their strength. Now, the whole success almost in having fine, full pots a mass of bloom, depends on choosing the plants with fine buds. These must be round, and not long and angular; and if you press each bud between your thumb and finger, a very little experience will soon enable you to decide whether it will be flower-producing or not. In the first case it will not only be round and plump, but hard to the pressure; in the other case the bud will be long, angular, and soft to the pressure. When the pots are thus filled, press the roots gently, and cover with 2 inches of sandy loam and leaf mould a little pressed down. If these pots could then be plunged in a gentle hotbed for a few weeks, but air left on back and front to keep the surface of the pots cool while the plunged part was a little warm, the success would be all the greater, increasing the top heat to an average of 60° when the buds began to break through the soil; and when the flowers began to open, removing the plants to a warm greenhouse or the window of a sitting-room. The plants will do very well if placed not far from the glass in a forcing-house at once, but better if the little mild bottom heat can be given. When done flowering, if the pots are top-dressed and well watered in summer, they will force again and again

for years; but for uniform fine display I would prefer planting them out when done, and selecting from fresh buds and their roots every season. We sometimes see people take up a lump out of the ground, and, after squeezing it into a pot, feel very much surprised that they get so many leaves and so few flowers. The picking the buds is my secret, and I am chiefly indebted for that to a kind neighbour; but if the Crystal Palace gardeners have a better one, I trust it will be made known for the general benefit. The man who makes it known may expect to get many a sweet look of thanks from the fairest and sweetest of all flowers.

R. FISH.

THE SCIENCE OF GARDENING.

(Concluded from page 368.)

In the next place, let us consider what circumstances render a plant most liable to suffer from frost; and let it be observed once for all, that to avoid such circumstances is by so much to render plants capable of enduring our climate.

First. Moisture renders a plant susceptible of cold. Every gardener knows this. If the air of his greenhouse be dry, the plants within may be submitted to a temperature of 32° without injury, provided the return to a higher temperature be gradual.

Secondly. Gradual decrements of temperature are scarcely felt. A Myrtle may be forced, and subsequently passed to the conservatory, cold pit, and even thence to an open border if in the south of England, without enduring any injury from the cold of winter, but it would be killed if passed at once from the hothouse to the border.

Thirdly. The more saline are the juices of a plant the less liable are they to congelation by frost. Salt preserves vegetables from injury by sudden transitions in the temperature of the atmosphere. That salted soils freeze with more reluctance than before the salt is applied is well known, and that crops of Turnips, Cabbages, Cauliflowers, &c., are similarly preserved is equally well established.

Fourthly. Absence of motion enables plants to endure a lower degree of temperature. Water may be cooled down to below 32° without freezing, but it solidifies the moment it is agitated.

Some plants, like some animals, are able to endure a very high degree of temperature. Sir Joseph Banks and others have breathed for many minutes in an atmosphere hot enough to cook eggs. So do certain plants flourish in hot-water springs of which the temperature varies between the scalding heats of from 150° to 180° of Fahrenheit's thermometer; and others have been found growing freely on the edge of volcanoes in an atmosphere heated above the boiling-point of water. Indeed it is quite certain that most plants will better bear for a short time an elevated temperature which, if long continued, would destroy them, than they can a low temperature. Thus a temperature rather above the freezing-point of water to Orchidaceous and other tropical plants is generally fatal if endured by them for only a few minutes, whereas a considerable elevation above a salutary temperature is rarely injurious to plants. But this is not universally the case; for the elegant *Primula marginata* is so impatient of heat, that although just about to bloom, it never opens a bud if brought into a room in which there is a fire.

Plants, generally, have the power of preventing their sap attaining to the unnatural elevation of temperature of the atmosphere around them. This in some degree may depend upon the bark and wood being bad conductors of heat, but they have a power of resisting heat quite independent of that; for the Pine Apple, though growing for months in a minimum temperature of 60°, never has that of its flesh whilst growing elevated above 50°. Now the worst of conductors would have conveyed heat through them in that time. This is only analogous to what occurs in the animal economy. Sir Joseph Banks, Sir Charles Blagden, and Dr. Solander, in the case already alluded to, remained several minutes in a room heated to 212°—the boiling-point of water, and though unpleasant sensations were produced, yet the air was easily borne, and the temperature of the body was very little elevated. If they breathed on the thermometer it sank several degrees; every expiration was cool to the nostrils, previously heated by the air inspired; the body felt cold as a corpse to the touch of the fingers, and the heat of the skin under the tongue was only 98°. A dog was exposed to a temperature of 220° for ten minutes, but its body's heat did not rise above 110°, being only 9° above its natural warmth.

In these rooms an egg was cooked quite hard in twenty minutes. But though plants have the power of preserving an internal temperature, differing from that of the external air in which they are vegetating, yet they have no more power than have animals to escape from the injurious excitement occasioned by being compelled to live for any protracted time in a temperature uncongenially elevated. In such a temperature, youthful and growing animals are stimulated to an excessive rapidity of growth, so attenuating, that nothing but removal to a colder climate can preserve them from premature death; and the same phenomena attend upon plants. These, over-excited by heat, acquire rapidly an unnaturally elongated growth, attended by a weakness of texture, that hastens them to decay, unless checked by a gradual reduction of temperature. The roots in such a heat absorb water with unnatural rapidity, and this is commensurately hurried through the sap-vessels of the stem and branches, so that the over-watery sap arrives at the leaves much too fast for them to elaborate it sufficiently, though an extra effort is made by preternaturally enlarging the leaves. The water transpired is excessive, but very little carbonic acid is inhaled, and consequently the quantity of carbon assimilated is very deficient. The whole structure of the plant is, therefore, watery and weak; and if a supply of water to the roots is withheld but for a few hours, the leaves wither and shrivel past revival. These organs not only lose the power to decompose carbonic acid, but also to decompose water, though the light to which they are exposed be the brightest sunshine; and thus deficient of carbon and hydrogen, the chief constituents of their colouring matter, they become unnaturally pale.

It must not be omitted to be observed, that all plants have great capability of resisting the reduction, as well as the elevation, of their internal temperature, however low may be that of the air which surrounds them. In the polar regions, and even in those of less northern latitudes, they have to endure a temperature very far below the freezing-point of water—yet their sap is never known to freeze. If water does congeal in the texture of a plant it rifts it, but this never occurs unless extraneous moisture has penetrated through some wound or decayed part. We have seen trees so torn, but never without finding a mass of ice within the trunk or branch traceable to some outward fissure. This is entirely in accordance with the experiments of Mr. John Hunter; and other experiments which we have tried, confirm us in acceding to the conclusion to which that distinguished anatomist, as well as Sprengel, Schubler, and others have arrived, that the sap of plants never congeals in the climate and soil of which they are native, however low the temperature to which they are exposed. Even in a temperature 15° below that at which the sap, if taken from the tree, would freeze, yet, in the living plant, it remains uncongealed. This has been tried with the Vine, Walnut, Elm, and Red Pine.

These experiments also determine that plants have but a slight power of generating heat; for the thermometer, placed within their stems, in winter sinks gradually nearly to the temperature of the exterior air; and in the spring or summer that instrument so placed does not follow implicitly the atmospheric variation; but this is not merely because wood is a bad conductor of heat. It is evident that a living plant has the power of preventing the congelation of its juices, and it is impossible to account for this phenomenon without connecting it with the plant's vitality; and we see no reason for concluding that plants, differing from animals, do not, during their respiratory function converting oxygen into carbonic acid, set free its latent heat, and thus preserve their temperature. It is beyond a doubt, that, by this chemical change, some plants at one period of their vegetation generate a considerable degree of heat. The stamens of *Arum cordifolium* emit so much heat at the time they shed their pollen, that twelve of them placed by M. Hubert round a thermometer raised the mercury from 79° to 143°. Under similar circumstances, M. Sennebier observed the stamens of the *Arum maculatum* were nearly 16° hotter than the surrounding air. The flowers of *Caladium pinnatifidum*, when emitting a strong ammoniacal smell, were observed by Dr. Schultz to be as hot as 81°, though the atmospheric temperature was but 61.25°. The stamens of the *Pompion*, *Bignonia radicans*, and *Polyanthus tuberosa* have also been observed to elevate the mercury at the time of shedding their pollen, but in a much slighter degree. In every instance this evolution of heat is occasioned by a proportionate absorption of oxygen gas by the stamens and pistils at the instant of fecundation. The stamens of the *Arum maculatum*, for instance, have been shown by

M. Saussure to absorb at that time two hundred times their bulk of oxygen gas, converting it into carbonic acid.

Although some plants thus cause a great extrication of heat, and others are capable of resisting the greatest known cold to which they can be exposed, yet all have degrees of temperature most congenial to them, and if subjected to lower temperatures are less or more injured proportionately to the intensity of that reduction. If the reduction of temperature be only slightly below that which is congenial, it only causes the growth of the plant to diminish, and its colour to become more pale; this effect being in such case produced by the plant's torpidity or want of excitement to perform the requisite elaboration of the sap, as it is by over-excitement when made to vegetate in a temperature which is too elevated. If blossoms are produced at all, they are unfertile, and the entire aspect of the plant betrays that its secretions are not healthy and its functions are deadened. Mr. Knight says, that Melon and Cucumber plants, if grown in a temperature too low, produce an excess of female blossoms; but if the temperature be too high, blossoms of the opposite sex are by far too profuse.

If plants be frozen—and though some defy the attacks of frost, others are very liable to its fatal influence—death is brought upon them, as it is in the animal frame, by a complete breaking down of their tissue, their vessels are ruptured, and putrefaction supervenes with unusual rapidity. As already observed when considering the means of acclimatising plants, the more abundant is the water present in their vessels, the more apt are they to be injured by frosts; whence the young shoots are often destroyed, whilst the older branches remain uninjured, and crops on ill-drained soils suffer more severely in winter than those where the drainage is more perfect.

Deficiency of light is another contingency most influential in promoting the decline and death of plants. In proportion as they are deprived of this stimulus, they become unable to elaborate their juices, and, deficient in colour, weak, and of unnatural height, they die prematurely, and decompose more rapidly than those whose fibres, more firm and robust, are less combined with an excess of watery sap.

Finally, the unhealthy vicissitudes to which plants, in common with all other organised forms, are exposed, inevitably bring upon them death; and it would be mere waste of time to argue against those physiologists who maintain that, in favourable circumstances, the life of plants may be prolonged indefinitely. Those who choose to surmise that some plants would endure throughout all time, if unfailingly preserved from all things offensive, and supplied without failure with all things agreeable, amuse themselves with imagining what would occur under circumstances of impossible attainment.

A plant must be subjected to unfavourable contingencies; and the greater the amount and frequency of their occurrence, the more speedily do they bring its life to a close—for the more do they aid chemical affinities in breaking down that resistance of their efforts which is the chief characteristic of vitality.

So long as a plant lives it triumphs over those affinities. Its roots overcome the affinity of the soil and take from it its moisture; its leaves overcome the affinity of the atmosphere, and deprive it of the watery vapour it has in solution; the internal vessels overcome numerous affinities, and, by the decomposition of carbonic acid and water, perform within their simple tubes that which can only be effected by the chemist's most powerful agents. These triumphs over chemical affinities, and that most characteristic of triumphs—its avoidance of putrefaction, endure in the same individual often for centuries of years; it is the most marked of the triumphs of vitality—its prime distinction as a creature, capable, for a time, of defying the laws which doom all organic matters to return to the dust from which they were created; for no sooner does that vitality cease, than the heat, the moisture, and the gases which vitality compelled to minister to the plant's luxuriance and health, now triumph in their turn, and serve to destroy that form which they had aided to sustain.

That heat is necessary to putrefaction appears from the fact, that no vegetable matter kept at the freezing temperature of water will decay. Advantage of which is taken by the gardener occasionally to preserve his summer fruits and vegetables in the ice-house; and Apples, Pears, and Grapes are borne unchanged half round the globe in the ice-ships which annually visit India from North America.

That dryness effectually prevents vegetable putrefaction we see every day in the fact that our furniture does not decay;

and the gardener knows that moisture is fatal to his stores in the fruit-room.

Putrefaction is also prevented by the exclusion of the atmospheric air, or, if it proceeds, it is by very slow degrees. An example of this is familiarly presented in a very effective mode adopted to preserve green Peas. These are put into dry glass bottles, and the bottles placed in water, then gradually made to boil. The chief part of the air is thus driven from the bottles and they are corked down tightly, and the cork rosined over whilst thus heated. What little oxygen remains in the bottles is absorbed by the Peas, and these remain green and unaltered for months, requiring only the addition of a little soda to the water in which they are boiled, to be as tender and as green nearly as when first gathered.

When a temperature of 45°, moisture, and atmospheric air occur to dead vegetable matters, these absorb large quantities of oxygen, evolving also an equal volume of carbonic acid. If composed of carbon, hydrogen, and oxygen only, the fumes they emit are not offensive; but if, as in the case of Onions and the Cabbage tribe, they contain a considerable portion of azote and sulphur, the smells emitted are disgusting.

As in all other instances where vegetable substances absorb and combine oxygen gas in large quantities, much heat is evolved by them when putrefying; it is, in fact, a form of slow combustion or burning, and advantage is taken of this by employing leaves, stable-litter, and tan, as sources of heat in the gardener's forcing-department.

When the putrefactive process of plants is completed, there remains a soft black mass, known as vegetable mould, or *humus*. One hundred parts of the humus of Wheat straw have of extractive or apotheme rather more than twenty-six parts, and the residue is lime, peroxide of iron, phosphate of lime, and carbonaceous matter. This apotheme is identical with the humic acid of Liebig, the ulmic acid of Braconnot, and the geic acid of Berzelius. It contains

| | |
|--------------------|-------|
| Carbon | 46.6 |
| Hydrogen | 20.0 |
| Oxygen | 33.4 |
| | 100.0 |

It was once believed—indeed is still believed by a few men of science, that this apotheme is the immediate fertilising component of organic manures, being soluble under some circumstances, and entering at once into the roots of plants dissolved in the moisture of the soil. But every relative research of more modern chemistry is against this conclusion, and it is now tolerably certain that a chief nutritive portion of vegetable manures are their carbon converted into carbonic acid, absorbed, either in solution with the earth's moisture, or in a gaseous form, by the roots. Apotheme is only one of the products formed during the progress of putrefaction, and is in its turn a source of carbonic acid. Carbonic acid has been long since shown to be beneficial if applied to a plant's roots. It abounds in the sap of all vegetables, though this be drawn from their very lowest parts; whereas apotheme is injurious to them if they are growing in a solution of it, and analysers have failed to detect it even within the extreme vessels of roots.

Acids are antiseptic, and retard the decay of vegetable matters, which explains why the woody fibre in peat soils remains so long unchanged, for those soils abound in gallic and other acids.

Alkalies, on the other hand, accelerate vegetable decomposition; and these being present in calcareous soils, is one reason that manures are sooner exhausted in them than in any other. Another reason for this rapid consumption is, that into calcareous and siliceous soils the air easily penetrates, and the rapid progress of decay depends in a great measure upon the free access of oxygen gas. Such access is less easy to manures buried in clayey soils; and, as a consequence, manures in them are much more permanent.

Such is the progress, such the phenomena, attendant upon the death of plants; and but one more relative question remains for our consideration, Can death be averted from plants—can they be made, by man's devices, an exception to that decree of limited existence, which extends over all other organised creatures?

Those who assert that grafting completely renovates the scion maintain the affirmative. From these we differ; for though it is happily true that grafting upon a young and vigorous stock imparts to the scion a supply of sap of which the parent stem is

incapable, yet this incapacity is only premonitory of the departure of power, which will, after a transient increase of strength, occur to its removed member. Every subsequent scion, however frequently, and whilst in apparent health, removed to another youthful stock, will be found to have a period of renewed vigour and productiveness of shorter duration than its predecessor. The Golden Pippin is occasionally quoted as a contrary proof: but this example has no such weight; for, supposing that this fruit yet exists, still it has not passed the age beyond which the period of unproductiveness and death in the Apple tree may be delayed by grafting; for we have no mention of this fruit that at all justifies the conclusion that the Golden Pippin existed much more than three centuries ago. A Pearmain Apple is mentioned in records as old as King John (A.D. 1205); but the Pippin is not noticed by any authority earlier than the reign of Henry the Eighth (1509). Lambard mentions that Tenham in Kent, famous for its Cherry gardens and Apple orchards, was the place where that king's fruiterer first planted Cherries, Pippins, and the Golden Reinette.

Supposing, then, that the Golden Pippin of our days is a genuine portion of the Tenham trees, handed down to us by successive graftings, yet still, it has not exceeded the age assigned by naturalists as that beyond which the life of the Apple does not extend. But then another question will arise—Supposing our Golden Pippin does appear to survive the allotted period, who will undertake to demonstrate that the Golden Pippin of Tenham still exists? It is quite certain that a majority of the Apples for which the title of Golden Pippin is claimed have no pretensions to the distinction, and more than one old person with whom it was once a favourite fruit, now declare that it is no longer obtainable.

Be this as it may, even if the variety in question has not departed, yet no organised creature shall endure through all time. Grafting may postpone the arrival of death, as the transfusion of blood will revive for a while the sinking animal, but the postponement cannot be for a time indefinite: the day must come in both the animal and the scion when its vessels shall be without the energy to propel or to assimilate the vital fluid, though afforded to it from the most youthful and most vigorous source. The scion may be made to grow vigorously, but who will venture to assert that the parent from which that scion was taken is existing, and can be made to exist on its own roots through an infinity of years?—J.

PUTTERIDGE BURY, ITS KITCHEN GARDEN AND FARM.

(Continued from page 214.)

It is too much the custom of those who visit a first-rate garden to disregard the compartment where the most important things are grown. Houses for specimen plants, flower-beds, or, perhaps, the Grape and Pine-houses get a share of notice; but the poor vegetable quarters are left unnoticed. This is certainly wrong, and I have no doubt but vegetables will have their day as other things have had. Whoever thought some thirty or more years ago that farming would have become so fashionable a pursuit amongst the highest of the land? and when we see the same class take such interest in the different branches of rural economy, as, for instance, the breeding of poultry, fancy rabbits, pigeons, and other things, we may fairly expect the contents of the kitchen garden to have their share when the time comes; but as I purpose giving a few hints on this subject at a future time I must not draw the remarks previously made on the garden at Putteridge to a close, without saying that the kitchen garden is, like the pleasure-ground, also in good order. In shape it is a parallelogram, the longest side facing the south. It is surrounded by good walls, and some useful vineries occupy part of the north wall. The south side of the south wall forms the conservatory wall, and joins the ribbon-border previously mentioned. The kitchen garden is divided in two by a broad walk lengthways through the centre; and by the sides of this walk dwarf Pear and Apple trees were in full bearing and very healthy. The side walls were flanked on one side (the inner one), by espalier-trained trees of the same kinds; but none of the trees in the garden seemed higher than the walls, which were about the usual height—12 feet more or less. Excellent crops of vegetables were observable everywhere, and the same neatness, order, and regularity prevailed here as in the more showy part

of the grounds. The only failing object were some Peach trees, which Mr. Fish says have done so two or three times when they appeared to be in excellent health; but most likely he will be giving us his experience on this matter some of these days. Everything else seemed perfect, and I cannot take leave of the kitchen garden without according it the praise of being one of the neatest I ever saw. Its levelness, position, and contiguity to other things tending to increase its importance, but, above all, its good keeping.

I omitted in the general description of the flower garden at Putteridge Bury to notice the walks; yet these always form important features in all places, and are certainly of more consequence for general effect than any flower-beds, however good the latter may be. I may say those at Putteridge Bury were composed of a white chalky gravel, the colour being of a light stone colour, and the walks as smooth and firm apparently as anything need be, and contrasted well with the smooth, well-kept turf. A broad walk of this kind led from the mansion in an easy-curved direction through the pleasure-ground in a south-westerly direction to the farm, the buildings of which form a capacious square, divided into suitable cattle-yards by strong iron fencing.

This farmyard deserves to be more minutely described than I have space for. Suffice it to say, that it was as commodious a one as ever I saw, without containing any of those fanciful appendages which give novelty rather than utility to such a place, and their cost precludes their general adoption. Here there was nothing but what might be copied in any farmyard. No steam engine, but plenty of horse machinery for such purposes, as it could be well applied to; cattle-feeding sheds well filled up, and several pig-houses with their occupants of all sizes, and in good and becoming condition—and it was easy to see that Mr. Hipgrave, the bailiff, took great pride in these things, while a good dairy was equally the ambition of his worthy spouse; and a peep into the adjoining fields disclosed some excellent crops of Turnips, stubble fields with scarce a weed, trim hedges and gates; while at home the stacks had been finished off with that care which denoted the good management of all concerned. And not the least effective of these things was the white or light-coloured painting of the walls and timber-work of all the buildings both on the farm and at the mansion. This clean appearance gave a sort of fairy aspect to the scene, contrasting so well with the floral beauty and healthy foliage by which all was surrounded. The ironwork of the farmyard only was of a dark colour as more becoming the position it was placed in.

It may naturally be asked, Where there was much to admire was there nothing to find fault with? And as I have ventured giving a straightforward opinion on most that I saw (which has been an almost continuous approval), it is only fair also to mention anything of an opposite kind that presented itself. Somehow, the task of publicly finding fault is far from being an agreeable one when the party we differ with happens to be one of our most valued friends; but opinions always have differed, and possibly I may be in the wrong. Nevertheless, I cannot but think a geometric design, by which some of the beautiful white gravel they have for walks could be introduced into the plot now appropriated as an Italian garden, would be a great improvement. I am certainly no advocate for the minute intricacy which some of our great masters in the decorative art try to impress on us as being beautiful; but as our flower-beds, as now constituted, are very often eight or nine months in an almost barren condition, something that would present a cheering aspect during that long period ought to be considered as well; and the intermixture of white walks, green turf, and even the naked flower-beds, when the others present agreeable diversified lines, create an interest which plain-looking beds alone fail to do in winter, however well the latter may be adapted for floral display at the fitting time. It is, therefore, not without some diffidence that I venture to give this as my opinion on the Italian garden at Putteridge. The size, the site, its depression, and other features, fit it exactly for something in which winter display ought to be considered as well as the more gay season, and if once acted upon, I have no doubt but the details will be well carried out; for I am not acquainted with any garden where the minutiae of flower-gardening is so well understood and carried out as at Putteridge Bury, and there are few places possessing greater variety of plants for display; for Mr. Fish is alike an enthusiast in old as well as an admirer of new things, and after testing their merits he turns them to account in some of the thousand-and-one

ways which only an enthusiast of long experience knows. To those who have seen the gardens when at their best I need make no apology for the length this description has been drawn into; to all others I would say, Go and see for yourselves. For my own part, I cannot but regard my visit to Putteridge Bury as one of the best professional treats I ever had, rendered still more so by Mr. Fish's kindness in pointing out everything of interest for a stranger to know. Of their appearance at the time I saw them—a wet day towards the end of September—the preceding pages will testify. Suffice it to say, that my own opinion was backed by that of other much better judges than myself, that the flower garden at Putteridge was the best managed we had ever seen. It is needless to say more.—J. ROBSON.

ROYAL HORTICULTURAL SOCIETY.

A SPECIAL Meeting of the Royal Horticultural Society was held on the 19th inst. at the New Hall, Kensington Gore, when the Chair was occupied by the Lord Bishop of Winchester, Vice-President of the Society. Among the numerous body of Fellows present, we observed the Earl of Erne, Lord John Manners, Judge Des Barres, Sir Peter Van Notten Pole, Bart., Sir J. P. Boileau, Mr. S. Gurney, M.P., Lieut.-General Fox, &c. Among the Fellows elected were the Right Hon. the Earl of Aylesford, the Earl of Gifford, the Hon. W. F. Byng, Lady Murray of Edinburgh, Lady Hume Campbell, and about one hundred and thirty others. After the ordinary Meeting had been concluded, a special general Meeting was held to receive the report of the Council, which stated that the probable cost of completing the substantial works in the Gardens would be £70,000 instead of £50,000, as stated in a previous report. The Council had received already nearly £40,000 on debentures, and they recommended the Society to give them express powers for raising an additional £10,000. Without that sum the Council would be unable to complete the Gardens on the plans which they considered advisable, and which had received the sanction of His Royal Highness the President of the Society. On the motion of Mr. C. Wentworth Dilke, seconded by Mr. H. T. Hope, the report was adopted, and power was given to raise the additional £10,000 as required. A vote of thanks to the Right Rev. Chairman was proposed by Lord John Manners; and, in returning thanks, his Lordship said that he considered it a high honour to be called upon to fulfil the duties of any office connected with a Society which had already been productive of so much good, and which gave promise of future usefulness. He had now been for a long period connected with the Society, and he had not considered it inconsistent with his position to devote a portion of his time to the promotion of its objects; as he believed that its usefulness extended not only to the gardens of the higher classes, but that even the productions of the humbler were equally influenced by it.

A plant collector is now about to be engaged by the Society to proceed on an expedition to South Brazil, whence many novelties may be expected, and in which the Fellows will participate by means of the distributions which periodically take place.

TO CORRESPONDENTS.

GARDEN NEAR IPSWICH (B. W.).—We know the soil of your garden very well; it lies to the south of the Gibbin river, which ends in the Orwell, and is just outside the chalk formation in that direction. Lime will do you no good. The way to improve your estate is to have all the land, every inch of it, well trenched and thoroughly drained, no matter if the bottom be mere flints and yellow clay—as parts of it, possibly, are. It must be trenched, leaving all below the first 18 inches in the bottom where the subsoil seems very bad, not otherwise. But in trenching an old garden to renew its vigour the soil must not be thrown in layers as in common trenching, but be thoroughly mixed. In October or November a good layer of chalk, which is close to your elbow, will do you more good than the same thickness of dung out of Ipswich. Let the chalk stand over the winter exposed to the air and frost, and when it and the soil are perfectly dry in March dig it in, and mix it well in the digging; then your artificial manures must be applied, only from May to September. But chalk, soot, and abundance of liquid manure should keep you out of the lottery of mixed compounds altogether. A friend of ours is going to put up a Kiddean furnace on the banks of the Clyde, about half-way between Glasgow and Greenock, but that is too far off for you, and we know not of another going on just now. But a nightcap on a dressing-table and a hat put over it would be quite sufficient for fifty bricklayers in Ipswich to get at the idea—the cap representing the fireplace; the hat, air-chamber all round it. A barrow upside down for fireplace, and a boat turned over it, is another form of the idea. There are several fields on both sides of the water from Harwich to Stowmarket that have never produced Lucern profitably: therefore, you had better consult some of the natives, and let alone the *Spergulas* till you have

thoroughly improved the land. While so engaged send often, and only two or three questions at one time, unless they are of general interest. Your soil is excellent for Roses and for the deep blue Violets; but the large grey or Neapolitan Violet often fails in your vicinity.

COTTAGE GARDEN SOCIETIES (J. C. C.).—Let us see the rules you mention, and then we will decide about publishing them.

FRUIT-TREE STOCKS AND CUTTINGS (Young Photo).—There is no special work on raising these. Probably Mr. Rivers could let you have a few of the kinds you mention. You must look to our advertising columns, or advertise yourself, for the animals you mention. Some Apple trees can be raised from cuttings—such as the Burr-knot, Codlin, and Joanneting.

DWARF FRENCH MARIGOLDS (S. Ryder).—We cannot recommend any one. Apply to some of the seedsmen who advertise in our columns.

IVY CUTTINGS (C. P.).—When Ivy assumes the tree character, and flowers and fruits on spurs, it will not strike root readily from cuttings, only by layering; or if it took root, the young growth would be that of common creeping Ivy. Dwarf Ivy bushes will grow under trees and in the thickest plantations almost better than in the open ground, if there is sufficient good soil to give it a fair start. Cuttings of Ivy, we believe, will succeed put in at any season of the year if the cuttings are of ripe wood—at least, we have to do so the year round; but no evergreen pays better to be well watered the first two years than Ivy. We do not think it possible to give too much water to young Ivy in common soil.

SOIL FOR RHODODENDRONS (Wye-side).—The black tenacious soil full of vegetable remains will not do for Rhododendrons, but in your light gravelly soil it would make a good bottom for a Rhododendron-bed, and this is how to prepare it. Dig out the size of the bed 2 feet deep, put 9 inches of that black soil in the bottom, and 15 inches deep of the best compost you can make for the Rhododendrons to grow in. That compost might be made with one-half of the top of the black soil by the brook, the other half of rotten leaf mould and sandy loam from the surface of some parts of your garden or grounds. Have it thoroughly well mixed in a dry state, and after planting the Rhododendrons mulch the bed with some litter. Your old, half-starved Rhododendrons will not do at all; only healthy young plants will succeed. This bed would not do on a chalky soil.

VENTILATING A GREENHOUSE—CUCUMBERS IN POTS (Telegraph).—We presume your roof is fixed; and if better could not be done, the making holes into the stable would answer, though the stable might be made very hot in summer, and, if not cleaned well, the smell from it would not be over-pleasant. We should prefer having three small ventilators in the roof—say 1 foot by 2 feet, or even a three-cornered sash close to the apex made to open at each end. Either plan you propose for growing Cucumbers will do. In pots you will have the plants more under your control. See answer to-day to another querist about Melons in pots. The pots may be from 13 inches to 18 inches in diameter.

RAISING SEED (J. M., Dundee).—We have told the writer of "The Little Market-Gardener" what you wish for.

CAMELLIAS, &c. (Gridiron).—Our "Greenhouses for the Many" will give you general directions. We shall publish separate treatises on all you mention, and many others. Cover the side of your south wall with a glazed lean-to. It will make an excellent structure for many garden purposes. The little work we have named will tell you how to construct it.

WATER CRESS (A Subscriber).—We know nothing about raising this from seed. The best practical way is to propagate it by cuttings. The work you name can be had from our office free by post for 8s. 10d.

VARIEGATED PLANTS (D. L.).—Six good variegated plants for specimens to exhibit for prizes are, 1, *Farfugium grande*, to be grown in strong, rich, loamy soil; and to have stove treatment from April to September, and a greenhouse for the rest of the year. 2, *Begonia Rex*, or *Marshalli*, or *Madame Aldwardt*, or the three, in open loamy compost, with a little peat and leaf mould, with one-sixth of sand, to be in the stove the year round. 3, *Pandanus javanicus variegatus*, strong loamy soil and peat, liquid manure in June, July, and August, and stove heat. 4, *Caladium argyrites*, a little gem with bulb-like roots, rests or dies down in winter, to be plunged in a hotbed in March; and when the leaves are full grown, then to be in the stove the rest of the year, and be kept quite dry in winter. 5, *Caladium Chantini*, a much stronger plant than the last with the same habit, requiring stronger soil—that is, one-third loam, one-third peat, and one-third leaf mould and sand, hotbed in spring and stove afterwards. 6, *Cyanophyllum magnificum*, very open turfy loam, turfy peat, leaf mould and sand; hotbed in spring and stove the rest of the year.

GLADIOLUS IN POTS (Idem).—There must be one bulb in a No. 24-pot, three bulbs in a No. 16, and five bulbs in a No. 12-pot. To be potted early in April, and kept in a cold frame to the middle of May, if it is convenient; but if not, plunge the pots at once under a south wall till Midsummer, then to a more open and less sunny situation, and not to be taken to the conservatory till the flowers begin to open. Gladioluses in large masses in No. 12-pots are splendid objects for the conservatory from July to October, as we used to have them for very many years; and we often had as many as ten large bulbs in one No. 12-pot, also in single pots and in threes. To get the succession we made four pottings—the first early in February, the second in March (the first week), the third at the beginning of April, and the fourth not till May was in. The first two pottings we had in cold frames till May was well in; the other two were plunged in the open ground, the last being set behind a north wall. Soil just the same as for Hyacinths, and no watering till the leaves were 2 inches or 3 inches long. There is not a single bulb in cultivation more suitable for pots than the Gladiolus. The late Mr. Jenkinson, brother to Lord Liverpool, used to grow a thousand of them in pots for many years almost next door to us, and every root of them sold at its full market value at the sale close to Kingston three years since; and some of these very "roots" we have seen this week in Mr. Jackson's nursery on the geothermal border in front of the stoves, with leaves 6 inches long. If we had anything to do with exhibitions, we would require every Gladiolus to be exhibited in pots. Any one can grow them in the open ground if the soil is good, or if it would produce splendid Carrots; but a man would need the perseverance usually found only in a woman to grow them well in pots—that is, to keep them from the red spider, and from the soil getting soddened by bad drainage and injudicious watering.

ASPHALTE WALKS (A Constant Subscriber).—Write to Mr. Appleby, Hobson's Grove, Longsight, Manchester. He contracts for the formation of such walks.

MISTLETOE SEEDS (Edward Collins).—Any seedsman can procure them for you.

CAMELLIA LEAVES DISCOLOURED AND FALLING (J. M.).—Your Camellia leaves might be injured by the frost, but they show more signs of scalding—such as would be done by standing with the leaves in a damp state exposed to a bright sun, and little or no ventilation to the house. Examine and see if there are net spots in the glass opposite where the plant stood; and if there are, dull them by rubbing a little putty over them. We have seen leaves affected in the same way by being too cold, and the soil too wet in a frosty night. We should not be surprised if you find the roots are decaying.

LILY OF THE VALLEY—MELONS IN POTS (P.).—An answer to an inquirer about the Lily of the Valley in another of our columns to-day will suit you. We have never had such Melons so heavy for their size, and so well flavoured, as when grown in thirteen-inch pots as you propose. We would place a couple of bricks with a space between them on the top of the flue for each pot to stand on; and, in the places between, evaporating-basins filled with water. As the Melons approach their ripening let these evaporating-basins get dry. We do not give a theory as to the reason; but we have astonished many by the weight of Melons so grown and trained on a trellis; and in general a heavy Melon for its size, if well ripened, almost uniformly proves a good one.

RAISING SEEDLINGS (J. H.).—Seeds of Lobelia, Mignonette, Phlox Drummond, &c., are better sown in seed-pans and placed in a hot frame. The double Zinnia should also be raised in heat in the same way, and shaded from too much sun. The objection to sowing in the bed is, that you cannot harden off the seedlings without exposing the whole bed. Do not think of raising seedlings in a room.

INSECTS (Overdell).—The minute insects found in considerable numbers on the surface of some Sycamore boards that were sawn out about eight or nine months ago are the white, fleshy, immature states (larvæ and pupæ), of a minute Beetle, belonging, most probably, to the genus Latridius, which feeds on mould and decaying vegetable matter.—W.

NAMES OF PLANTS (Amateur, Stockton-on-Tees).—They are, Clematis cœrulea, Phlebodium aureum, and Passiflora edulis, apparently.

POULTRY AND BEE-KEEPER'S CHRONICLE.

POULTRY SHOWS.

APRIL 1st and 2nd. SUNDERLAND. Sec., John Littlefair, 6, Bridge Street. Entries close March 19th.

MAY 21st, 22nd, and 23rd. CHESTERFIELD AND SCARSDALE. Hon. Sec., Mr. Thos. P. Wood, jun., Boythorpe House, near Chesterfield. Entries close May 1st.

MAY 22nd and 23rd. BEVERLEY. Hon. Sec., H. Adams. Entries close May 4th.

JUNE 4th, 5th, 6th, and 7th. BATH AND WEST OF ENGLAND. Steward, S. Pitman, Esq. Entries close May 1st.

JUNE 19th, 20th, and 21st. COALBROOKDALE. Secs., J. B. Chune, and Henry Boycroft, Coalbrookdale.

JUNE 28th. DRIFFIELD. Sec., Mr. R. Davison. Entries close June 22nd.

JUNE 28th and 29th. TAUNTON. Sec., Mr. Charles Ballance. Entries close June 14th.

JULY 2nd and 3rd. BLACKPOOL. Sec., Mr. E. Fowler, jun.

N.B.—Secretaries will oblige us by sending early copies of their lists.

DORKINGS TOO LARGE TO EXHIBIT.

In your "Letter Box" you state, "there is no limit to the weight of Dorkings." I beg to differ from your opinion, having proved the reverse upon several occasions. I have exhibited pens of Dorkings of immense bone and frame, but in low condition, otherwise I have taken first prizes with them in that condition; and directly I get them in good, healthy, laying condition, I am told by our so-styled great authorities on poultry matters that I have got them too large—in other words, too fat and heavy.

I admit our present judges have not been used to such immense frames in poultry: therefore they have no conception what weight of flesh can be carried upon such birds, and still to be in good store condition.

I claim to know when a fowl is in good condition as well as any of our great authorities, having no doubt but I have bred and reared more poultry personally than all our so-styled great authorities put together.

In fact, weight has had very little to do with prizes in some of our late poultry exhibitions.—JOHN DOUGLAS.

[When we said that Dorkings cannot be too large for exhibition, we did not say, as our correspondent seems to think, that great weight would compensate for other great deficiencies. What we said we say again:—Dorkings cannot be too large; and if two pens are equal in all other points, the largest ought to be adjudged the best. "Immense bone," large "frames," if accompanied by "low condition" or excess of "fat," may constitute a large, coarse, unsymmetrical fowl, deservedly defeated by a pen of less heavy birds, superior in symmetry, condition, and feather.]

PLYMOUTH POULTRY SHOW.

(From a Correspondent.)

THE weather was splendid both days—in fact, the finest weather we have had for twelve months. More than £38 were taken at the door. So the number of admissions must have been very great, when it is considered that a great many visitors went in with subscribers' tickets. The Committee calculate upon having about £5, or perhaps more, to go towards next year's account. All the hampers were sent off at 9 o'clock the morning after the Show closed, and some on the night of the closing. The Cochon class was the pride of the room. Even if the three pens of prize birds were taken away it would have been an excellent class. Mr. Fowler's Aylesbury Ducks were splendid; the second-prize birds were claimed at £7 7s. Miss Selina Northcote was first in the "any other variety class" with White Spanish, and they also were claimed at the price put on them—viz., £5 10s.

POULTRY AND PIGEON SALES.

SALE OF MR. WICKING'S BIRDS.

THE attendance of buyers at Mr. Stevens' sale room on the 12th inst. was inconveniently large. Amongst them were many of the *élite* of Pigeon fanciers, attracted by the sale of the remaining portion of the stud of Mr. Wicking, who has retired from the fancy. The most important of these birds were the silver, blue, and yellow Short-faced Baldheads. In addition there were a few Almond Tumblers, several pairs of Magpies, and a few German birds. The entire stock consisted of between

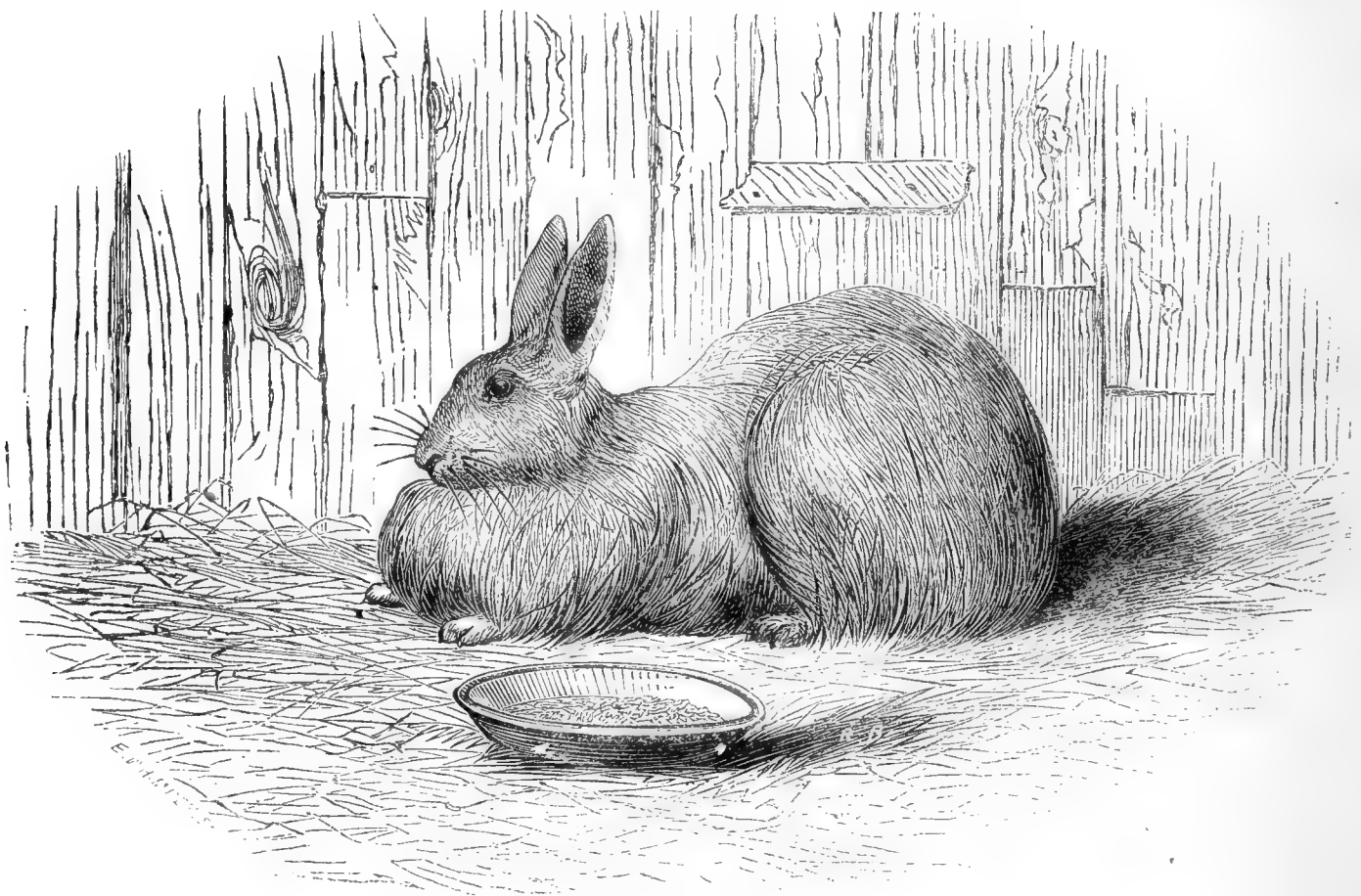
seventy and eighty lots, by far the larger proportion of which were single birds. The average price realised was considerably over £1 per lot.

The demand for really good birds continues steadily to increase, and, as a consequence, all the valuable specimens were sold at very fair prices. As invariably happens, also, when the stock of a celebrated fancier is sold, the desire to possess some of the strain leads to ridiculous prices being given for the inferior ones. Some of the Magpies were good; they were sold in pairs, and averaged 10s. per pair. The Swallows were not equal to the Magpies, but realised about double the price. Two Almond Tumbler cocks sold at £3 and £2 12s. respectively. The Baldheads were the gems of the collection, especially the silver hens and blue cocks. These were sold singly, and a number of them produced sums varying from £1 to £2 each. Some few even were sold for more than that amount. The extreme neatness, small size, and general good character of these birds called forth universal admiration. There were six lots of Almond Baldheads—a variety that we believe was first bred by Mr. Wicking. They were very pretty, though defective in distinctness of marking, the white head not being well defined. They averaged £2 per lot. Mr. Holmes sold some good Almonds. One hen produced £2 6s. The other lots from different amateurs included several Powters, but none of any character. One red-pied cock of no remarkable worth sold for £2.

The poultry included nothing of any great merit. There were four lots of really good Embden Geese, that were almost given away; some Dorkings, pretty in feather but wanting in size; and a number of very bad Hamburgs, that sold for more than they were worth.

THE RABBIT (LEPUS CUNICULUS): ITS HISTORY, VARIETIES, AND MANAGEMENT.

(Continued from page 375.)



THE ANGORA.

THIS fine species, of which we have before spoken, is a native of Asia, and the city of Angora gave it its name. It is worthy of remark that several races of animals that are to be met with in that country, the suburbs of Brousse and the plains of ancient Troy, have long silky fur, such as the Angora cat and Angora goats.

The Angora Rabbit differs from the common, not only in the fineness of its fur, its skin and its habits, but also in its flesh, which is not so tender as that of many other Rabbits, and, consequently, not so often used for the table. Its fur varies in

colour. The white is the most common, yet not the less valuable; then come the grey, slate, or blue, black-and-white. The fawn-and-white is rare.

Their skins are much sought by furriers, and when in quantity and good condition realise high prices; and it is somewhat surprising to see how little this interesting kind has been encouraged and cultivated in this country.

M. Didieux states that this species offers notable differences from the other common kinds, or Short-furs. Thus, if the male were to be separated from his female and family, he would

grow thin and even die of grief. He is careful of the little ones, and he can be left without danger to live in company with them. The Angora is endowed in an extraordinary degree with the love of society. The young are never ill-treated by the old, and the young have a great respect for the aged; and the grandfather exercises patriarchal authority over his sons, grandsons, and great grandsons.

It must be particularly remembered that this race is bred for its long silky fur, that the old furnish it more abundantly than the young, and that their skin as fur is more valued. In France their silky fur is combed every second month, or every third at least: and as this operation makes them chilly, they above all other races should have warm lodgings, with bedding more abundant and clean to shelter them.

From the social character of these Rabbits the breeder will, of course, draw this inference—that they can be bred in large numbers together, as it is done in the village of St. Innocent, in Savoy, the account of which, at page 294, we have already given.—R. S. S. (To be continued.)

NEW COMB-BAR.

It is, I believe, undoubted that nothing has contributed so much to prevent the general use of bar-hives as the necessity of affixing guide-combs for the purpose of compelling their inhabitants to construct their combs in the right direction.

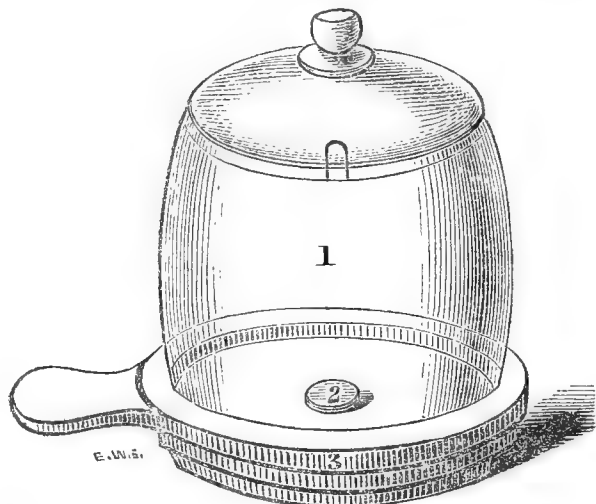
With the view of obviating this inconvenience, I have contrived a comb-bar of which the annexed is a section. It will be perceived that the lower angles of the bar are rounded off, whilst a central rib is added of about an eighth of an inch in breadth and depth. All that is necessary to insure the regular formation of combs is to coat the underneath surface of the central rib of every bar with melted wax* previous to having a swarm in the box. I tried this contrivance with two artificial swarms last year, and found it answer admirably.

Messrs. Neighbour & Sons, of 127, High Holborn, and 149, Regent Street, London, have named this the "Woodbury bar," and have, I believe, adopted it in all bar-hives and boxes manufactured by them, so that it is likely soon to be pretty widely disseminated and tested in different parts of the kingdom.—A DEVONSHIRE BEE-KEEPER.

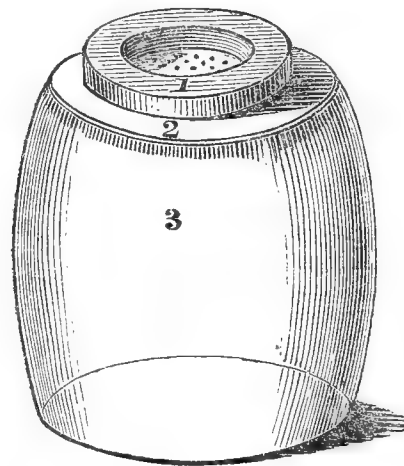
HONEY FOR BREAKFAST DIRECT FROM THE HIVE.

THE supers and glasses that I have been accustomed to use hold from 12 lbs. to 20 lbs. of honeycomb; but, irrespectively of my own irreconciliation to large supers, I find my bees seldom take so kindly to them as they do to some smaller ones which I occasionally apply. This, I grant, may be owing to local circumstances; for in a midland agricultural county how soon the mowers operate on fields of grass, Dutch clover, or saintfoin when they come into flower; and our parks and pastures are minus the heather and almost the wild thyme—we gain a meagre compensation for them from the blossoms of the fruit and forest trees. In Glasgow I may have been taken for an idle man, for how long I have stayed to admire those Stewarton boxes filled with beautiful honeycomb, as exhibited in the shops for sale! But that was at a season when in Scotland all the bees may rush to the hills for the heather-bloom, and procure honey to any amount. But let me say to their fortunate proprietors, Do not gainsay our humble supers by consequence. Consider the distance of flight and labour it takes our bees to fill them even. So, with every good wish to the systems best adapted to individual taste or convenience, to locality and climate, I come now to unfold a conception for a breakfast table of quality, for whatever comes there should not be so profuse as to appear vulgar; and those parts of the repast representing Nature proper, such as fruits and honeycomb, should arrive as naturally as possible, which cannot often be said of the latter after it has undergone the ordeal of the grocer's shop. In fact, the foreman at Messrs. Fortnum & Mason's the year before last said to me, "What we chiefly want for our customers is, for the honey to arrive to us just as the bees work it, in

glasses, in quantities not exceeding 3 lbs. to 4 lbs." He might have seen as he said it disgust working upon my countenance at the dash-smash manner his man was ejecting the honeycomb from my glasses. Those combs whose progress I had watched to completion, daily admiring the wonderful law which caused the little workers instinctively to build them, now soon to become exhibited sprawling in a dish, pawed about by profane fingers, and ran over by the flies!



1. Glass $4\frac{1}{2}$ inches deep and $4\frac{1}{2}$ inches diameter, top and bottom, inside measure.
2. Piece of cork 1 inch diameter, placed in the hole at the bottom of the glass when filled with honeycomb.
3. Stand made of sycamore wood 1 inch thick, 6 inches diameter one way, and $7\frac{1}{2}$ inches another.



1. A ring of lead two-eighths of an inch by three-eighths of an inch.
2. A piece of perforated hat-box kept in its place by the lead.
3. The honey-glass reversed upon the adapting-board as set to work.

Well, having to stay in London a fortnight or so last winter, I went on the day after my arrival to the Whitefriars Glass Works, and was soon in deep consultation about the formation of a honey-glass, upon the model of a small bee-hive, board, and alighting-lip, as they would appear blown into one. "Yes, the manufacturer thought the thing could be done." So I left my plan and would call again upon intimation after the next "blowing day," when I received the following laconic epistle, "Sir, your glass is ready." Yes, but too much like the frog in the fable comparatively for my idea. Another was made—an improvement, though not my idea yet, and my time in town had expired; so the affair must continue to its completion through the agency of the post, and will be best developed by the following letters:—

"Two glasses and covers at 7s. 6d.

"Per rail this day.

"The price of the above by the dozen would be about 6s. 6d."

"Gentlemen,—There is still the radical fault in the last patterns about the rim of the cover. It is too deep, and will smash the combs, making them very unsightly. If Messrs. Powell could overcome this objection, I would dispense with the set-offs and projections around the bottoms of the glasses, that being the chief difficulty in their formation which adds to their expense—so much so, that 6s. 6d. each would prove a prohibitory price against selling the honey they are intended to contain. Would Messrs. Powell be good enough to send me word what plain glasses would cost per dozen—viz., the glasses to be made of good substance, and gently bulging, similar to an old-fashioned

* The readiest mode of doing this is by inverting a heated flat iron between a couple of bricks, and a little wax having been melted on its surface, the centre of the bar should be slowly drawn across the iron.

straw bee-hive, $4\frac{1}{4}$ inches deep, and $4\frac{1}{4}$ inches diameter, top and bottom, inside measure, fitted with neatly rounding covers, and their rims not to exceed in depth if possible more than one-eighth of an inch, with small bow handles, and holes cut in their sides just sufficiently large to admit the handle of a dessert-spoon? The bottoms of the glasses also to have holes in their centres 1 inch in diameter."

"Sir,—We cannot give you the exact cost of the glasses made to your dimensions, but we think they would come to about 42s. per dozen. We should want to make some before we could give you the exact price."

"Gentlemen,—My idea from the first was to try for some honey-glasses not to exceed 3s. each. Your last statement gives me hopes that it can be done, if you substitute knobs instead of the bow handles for the covers. Make two glasses according to my last dimensions, and send them to me for approval. Knobs *versus* bows."

"Two bee-glasses and covers at 3s. 9d.

"Per rail this day.

"The above will be 39s. per doz., and if we can do them for 36s. we will."

"Gentlemen,—The two glasses will do very well, the covers are a great improvement. Continue to give the least possible measurement of depth in the rims. Send me four more as soon as possible. I must not order them by the dozen till I have introduced them to try their success in the market."

Thus ends the history of the glass formation; but it must have a leg to stand on, which will be best wrought by a turner's lathe out of the whitest piece of sycamore wood quite 1 inch thick, having a six-inch diameter one way, and seven and three-quarters another. Round it off with the exception of a one-inch-and-three-quarters projection at its broadest diameter to imitate the alighting-lip of a bee-board, chamfer this upwards and outwards to its extremity where it is left one-eighth of an inch thick, and it will serve the purpose of a handle. Measure three-eighths of an inch, and turn and cut away from thence its under edge in two two-eighths recedings, forming, as it were, the capital for a column, with an abacus of three-eighths. Then within a margin of four-eighths hollow out the surface about three-eighths deep, and keep the glass that is intended to fit at hand, so that the sides of the hollow may be formed to bind it firmly, and also in the centre of this hollow form another about 1 inch diameter, and one-eighth deep, to admit the end of the piece of cork which is to be placed in the bottom of the glass when it is filled with honeycomb. These will cost 10d. each. When the glass is set to work on the hive it is placed mouth downwards over the hole of the adapting-board, and over the small hole in the glass is laid a piece of perforated hat-box, kept down by a ring of lead, which will prevent the warm air of the hive becoming too much condensed upon the sides of the glass. If a piece of carpet formed in the shape of a bag is slipped over the glass, or glasses, before the overall-hive (see p. 185), is put on, so much the better; as it preserves a warm temperature, the air of the hive is less likely to condense, and the bees are better enabled to anneal their wax to the glass, and, agreeably to their natural inclination, it assists to preserve a total darkness.

When the bees have nearly filled their combs in the glass with honey, pass a loop of strong thread or very thin wire over the glass on to the surface of the adapting-board, holding the ends in the right hand steady the glass with the left, and draw the thread away between the junction of the glass and board, which will separate the connection of the combs, and you will at once perceive the reason why the fillet should not obtrude itself above the adapting-board, as also advised upon at page 185. Now, grip the top of the glass with the right hand, lift it, and place an empty one in its stead, lay upon it an adapting-board with a hole cut in its centre quite 1 inch in diameter (I form these out of the lids of those small, round, flat, foreign, crystallised fruit-boxes, and also the fillets), set the glass with honeycomb upon it, and the bees will soon complete the sealing over of the combs; then take it with the adapting-board immediately away, and place the piece of perforated box and ring of lead upon the glass remaining, and when that is nearly filled with honeycomb, substitute another empty glass beneath as before, and so on. It is well for all the glasses to have a small piece of guide-comb attached to their bottoms, or rather their tops, as they are placed for working, as the bees all the more readily take the hint. Hold a glass in one hand and a piece of guide-comb in the other before the fire for an instant, then press the comb against the glass and the fixture is complete.

On removing a filled glass from the hive, set it on its proper position upon a table placed handy, and cover it at once with a common bell propagating-glass, up into which the bees will ascend by degrees. It must be quickly lifted now and then, and the prisoners shaken into the air (they return to their hive), and replaced immediately; or what is better, use two glasses, one off and one on alternately, for robbers are always on the look out on these occasions—they are very expert in their movements to get at the coveted sweets, and when they do so they show no more mercy to the combs than does the tradesman's knife.

I mark each glass, cover, stand, and cork with their uniform numbers on adhesive labels, and each glass is weighed before I set it to work. These attentions save much future complication, and the nett weight of the honey can always be shown. My tickets for numbering are simply made from the margins of the sheets of postage stamps, to each set three small squares thus—

No. 1.

and one larger piece. The latter made to adhere over the spoon-hole at the side of the cover, and effectually prevents a fly even from intruding if the ticket is bent under when the cover is placed in its position. Unless they wish it I shall not require the purchasers of my honey to take the glasses permanently, but merely to guarantee the amount of their prime cost in the hands of the dealers, to be received again in return. It is from what I consider the desirableness of the manner, the earliness, and consequent superior value of the honey in the market that I calculate upon reimbursement.

No. 1.
Weight of
glass $1\frac{1}{2}$ lb.
Weight of
honey ... 4 lbs.
Price.....

We are honey eaters here, and when it is taken fresh from the hives in the morning to appear on the breakfast-table in the appropriate glasses above described, backed by fresh-gathered strawberries, butter churned at 6 P.M., and eggs taken scarcely cold from the nest, why it is a match for your famous breakfasts, Mr. Cameron, of Inverness, hot bannocks, cold grouse, heather honey, &c., and those long walks i' th' hielands for the sauce withal.—UPWARDS AND ONWARDS.

WHAT ARE THE TRUE DIMENSIONS FOR COMB-BAR HIVES AND BOXES?

SUCH works as I have read state the breadth of brood-comb to be $1\frac{1}{2}$ inch. The combs that I have examined in this neighbourhood, and they are not a few, measure no more than fifteen-sixteenths of an inch in breadth, thus being three-sixteenths less than seems to be the size in other parts of England.

Last season I had a box without bars or guide-comb 12 inches square, the bees wrought in it eight combs all perfect and in regular order, with the exception that one comb was a little imperfect on one side. If the box had been $12\frac{1}{2}$ inches square, there would have been eight full-sized combs according to the scale of working observed by the bees of this neighbourhood. Here is a difference of 1 inch between the size observed by the bees in this district, and that recommended by such writers as Taylor and the "COUNTRY CURATE."

Being about to begin bee-keeping on the improved principle, I wish to know whether the bars of my hives should be $1\frac{1}{2}$ inch or the size observed by the bees. If the bars were $1\frac{1}{2}$ inch, there would be a space of about three-fourths of an inch between the combs, which would, perhaps, be detrimental to the prosperity of the hive, or the bees might defeat the object desired in bar-hives, by following the scale of their instinct in working an extra comb, and thus prevent the extraction of the bars.—NORTH-LANCASHIRE BEE-KEEPER.

[We have submitted your letter to Mr. Woodbury, who, we believe, has had more practical experience in the use of bar-hives than any other English apiarian. The following is his reply:—"I raised this question in THE COTTAGE GARDENER so long ago as the autumn of 1858, stating my belief that the dimensions given in apiarian works were considerably in excess of the true proportions, and asking bee-keepers generally to communicate the result of their observations on this important point. The only answer to this appeal was from a gentleman who no longer writes for THE COTTAGE GARDENER, and who stoutly upheld the correctness of Mr. Golding's measurements. I now find that American apiarians, following in this respect the example of those of Germany, have adopted a narrower gauge, and have laid it down as a rule that $1\frac{1}{2}$ inch is the right distance from

centre to centre of each comb. So satisfied am I of the correctness of this principle that, as I have already stated, if I were about to commence bee-keeping, I should adopt $12\frac{1}{2}$ inches square as the right size for eight-bar stock-boxes. With supers the case is different, as thick combs may be deemed rather an advantage than otherwise. With respect to the size of the bars themselves, I have deviated very considerably from the general rule, and have found an advantage in so doing. My bars are only seven-eighths of an inch wide, by three-eighths thick. This breadth allows five-eighths space between each bar, which greatly facilitates their extraction, whilst it admits of a larger opening in the crown-board being made available for feeding, &c. Your correspondent's observations coincide very exactly with the experience of—A DEVONSHIRE BEE-KEEPER.”]

HACKLES AGAIN!

WHILE pleading for the defendant, at page 296, in the cause *Milk-Pan v. Straw-Hackle*, I regret having inadvertently trodden on the toes of the counsel for the pursuer, so as to elicit the shout of “Hackles Avaunt!” and must really apologize for my unintentional rudeness; my sole wish being to see the old hackle get fair play, and, so far as my feeble strength permitted, to give your correspondent, in quite a fraternal spirit, a little gentle impetus in what I conceived an “Upwards and Onwards” direction. Having already said a good deal on bee matters in the volume now closing, and wishing to reserve a little breath for the coming one, I must, after endeavouring to remove your correspondent's fresh difficulties, leave the verdict in the hands of the jury—your impartial apiarian readers. His suspicion of my oat-straw hackles attracting the Titmice is, I am afraid groundless. Our farmers in this quarter are much too sharp fellows to leave them any such gleanings. The sheaves are all hand-thrashed, and I take care to see that those used for this purpose get a little extra flailing. My old enemy, the Titmouse, has been too often taken in the act to admit a doubt of his guilt, and the excavations round the entrances of my wooden and straw hives afford satisfactory proof of the vigour with which he can, and his knowingness where to peck. Should your correspondent not be mistaken as to the bird, I am at a loss to account for his exemption from attack, as, from the days of old Purchas downwards, who testified to individuals devouring ten and twelve bees at a time, they have borne a prominent place in the black list of bees' enemies in every apiarian work I have seen. Even the late amiable Mr. Payne's milk-pans were no security, as back volumes of *THE COTTAGE GARDENER* bear witness: indeed, they have become so notorious—quite “habit and reputes”—that I thought he must be some briefless barrister in really desperate circumstances who would take up their case. As their severest attacks are early, perhaps they may breakfast before your correspondent is up and out in the mornings.

As to the windy objection. After my hives are duly stored for the winter, the board secured on the firm pedestals to be described in a coming Number, the stout iron hooks at the corners in addition to facilitate the weighing, afford a hold for a couple of strong cords carried over the top of the hive, thus lashing it securely to the board; the hackle then set neatly over, the hedge-shears removing the least inequality, the iron hoops previously alluded to tied tightly down over it. So secured, I will warrant them to withstand a brush of *Æolus'* wing, that, sweeping underneath the rim of the pan, would transport it and the stone mouldings a considerable distance. The tornado of February, 1856, that bereft us here of sixty odd trees, some of which had braved the blasts of centuries, did not overturn a single hive or hackle, with only the shelter afforded by the garden wall in their rear.

I heartily congratulate “UPWARDS AND ONWARDS” on the flourishing state of his stock, which is no more than his care of his “little people” deserves. His painful mortality report does not speak so much either for or against the pan. As another exemplification of the carelessness and cruelty of bee-keepers, after the honey failure of last season, allowing their stocks to perish from sheer starvation—the severity of the winter being by no means the cause but merely their excuse. I do hope we may be instrumental in inaugurating an improved system in and around Woodstock ere long: to aid him in that good work the present writer's pen in these pages, so far as it can, is at all times at his service.

I would remark in conclusion, that when your correspondent again swings his flail, let it not be to attempt to thrash into

“abomination” the unfortunate hackle as in the first instance, or merely a few pickles for the benefit of the Titmice as in the last; but rather let his blows fall thick and fast about the shoulders of the bee-keepers, the monuments of whose shameful neglect they stand. If he inclines to draw a comparison as to results, let it in all fairness be between a milk-pan that has seen such service as leaking cracks and crevices evince, and the dilapidated hackle; or if, on the other hand, it be between a ringing pan and glittering hackle, then I suppose we must agree to differ as to their comparative advantages, on the footing that what may suit in the sunny south will not at all answer in this “land of the mountain and the flood.” Still in all seriousness, and while fully sympathising in his search for a cheap handy cover, I am much afraid, for the reasons previously given, that the milk-pan is not the thing, and expect he will yet find a better substitute. Let him carefully peruse his own authority—Mr. Payne's capital little manual, “Bee-keeping for the Many,” where, at pages 24 and 26, he will see how that observant bee-keeper tried to overcome the chilling influences of the naked pan in February and March, promoting early breeding with haybands; and again, at pages 39 and 44, how in July and August he was forced to combat the opposite evil of the hot-baking, preventing the combs falling, and the hive-juice (not “X's” pie-juice), running in streams from the entrance by shading with fir branches, from all which cares we hackleists are entirely exempt. He may also take a glance at the various modes of execution meted out for Master Titty at page 22.

Your other correspondent, “X,” should not grudge the cheap hackle. When they have done good service in the apiary they are equally serviceable in the piggery, the only cost being the trouble of getting them up. I think too much of my little favourites yet to bury them from observation and recollection beneath the sod. His turf expedient would be more useful than ornamental—perhaps a rendezvous for such cattle as earwigs; still, from its protecting effectually from the sun's heat and winter's damp, is vastly preferable to the milk-pan.

I had in view the *internal* dampness of “A DEVONSHIRE BEE-KEEPER's” hives, and thought possibly it might be partly influenced from want of *external* protection. We know more, I am afraid, of humidity here than he in Devon. The masses of clouds that come floating fully charged from the western ocean are beat up by the high hill-tops of Argyleshire, and discharge themselves in such torrents on our unfortunate heads, that we have fairly earned the soubriquet of “the Pluvians,” bestowed on us by our neighbours to the east. Indeed, the anecdote of the herd laddie is too often recalled—when interrogated by the tourist “if it *always* rained here,” replied, “No, it whiles snaws.”

The pollen collecting of the 3rd of February was fully as much a matter of surprise to the writer as to “A NORTH-STAFFORDSHIRE BEE-KEEPER.” It was, unfortunately, of but short duration, Jack Frost once more resuming his sway, and we have been several times again enveloped with last winter's familiar snow mantle; still the bees embrace every favourable blink to be at work. The early supply was drawn, not from spring flowers, as we had only then the Christmas Rose in bloom, but I should think, from the direction of their flight, they were indebted to some early-budding tree. This locality need not at all arouse any feeling of jealousy in your correspondent, as our swarming season cannot be said to be till the distant Ben Lomond doffs his snowy nightcap well on in June, a May swarm being a pleasure I have yet to witness. Any isolated cases that ever have occurred are duly chronicled for years afterwards amongst the remarkable occurrences.—A RENFREWSHIRE BEE-KEEPER.

THE CANARY AND THE BRITISH FINCHES.

(Continued from page 243.)

THE GOLDFINCH.

THE docility of the Goldfinch, as well as its pleasing song and bright colours, still further enhances its worth as an amusing pet. Goldfinches are easily tamed, and become so bold as to scold with open mouth and spread wings, and to peck the finger or nose of those they are acquainted with, and even to take hemp-seed, or some such tempting morsel, from the hand or from the lips.

The first bird I ever possessed was a hen Goldfinch. I was but seven years old, and Mary Goldfinch, for such was her name, was my constant companion, and she soon became very tame; she would scold and fight me whenever I teased her. If let

out of her cage she would fight on the table, retreating to her cage to rest, and again returning to the charge. Sometimes I would perform the part of a cat, pounce on her, and carry her off in my mouth; then laying her down on her back, she would remain motionless till I turned her over, when she would spring to her feet, and either peck my finger or fly off to shake and arrange her disordered toilet.

After awhile my stock was increased by a Trumpeter Pigeon and a collared Turtle Dove, and these had to perform certain peregrinations with Mary Goldfinch as jockey, or they were formed into a pyramid—the Pigeon forming the base, and the Goldfinch the apex. One day Mary Goldfinch flew away, and long and loud were my lamentations, and when my father returned home he started off to procure me another bird. It was a very wet afternoon, and he had not proceeded far when he met a man who had picked up my poor Goldfinch in the street, drenched in the rain; and thus by a mere accident my favourite bird was restored to me. To prevent a recurrence of the same misfortune, my father cut the feathers of one wing to prevent her flying. But in this state she lost much of her value in my ideas, and I secretly drew out the cut feathers, which in time were replaced by new ones; and thus fledged, she again made her escape, but after disporting herself in the garden for a time she returned of her own accord; and though she often escaped afterwards, she always came back to her cage when tired or hungry. Poor Mary lived several years, and, unlike many pets, died a natural death, much respected and regretted.

The Goldfinch is frequently taught to draw water, as I described while writing of the Redpoll. Although capable of being tamed when caught old, as was the case of Mary Goldfinch, yet they are even more tractable when reared from the nest.

When it is desired to raise Goldfinches by hand, they should be taken from the nest when about half fledged. The older, however, the better always, provided they are not too old to open their mouths to be fed, and they may be reared on a paste of sopped bread and maw seed (poppy seed). Some persons use rapeseed, but if that is used it should previously be scalded and well washed to deprive it of its pungency. Others use crushed hempseed; but I think maw seed is much the best. They require feeding often, and the food should never be given them if at all sour. Some people, to avoid the trouble of feeding by hand, place the nest containing the young birds in a cage and hang it on the tree where found, and leave the old birds to feed their young through the bars of the cage. This plan often succeeds, the young birds being at the same time provided with seed and water for them to peck at if inclined, that they may learn to feed before the old ones forsake them, which, if it is an early brood, the old ones are apt to do in order to breed again. These young ones, though they have never flown at liberty, yet are more shy than nestlings reared by hand; but are tamer than the Greypate branchers caught after they can feed themselves. All are, however, successfully used for Mule breeding, and may be coupled with Canaries the succeeding spring, though most fanciers advise their being two years old before they are put up to breed.

When young birds are not easily obtainable, old-caught birds are often successfully used, but with less certainty, and they require more management and attention. Some fanciers procure the birds from the autumn flights and keep them in the neighbourhood of Canaries during the winter. Others catch the Goldfinches late in spring, and introduce them to the Canaries at once; but this practice is less certain, and many of the Goldfinches die in meeting off at that season of the year.

As Goldfinches breed late, the end of April will be early enough to put them with the Canaries. They require much watching; for although some will pair readily and make good husbands and attentive fathers, others are mere mischievous gallants, which will only flirt with the hen Canaries, and amuse themselves by pulling the nest to pieces, eating the eggs, or pulling the young ones from the nest and pecking off their beaks or feet: therefore, if Mr. Goldfinch exhibits his mischievous propensities, the eggs should be removed as soon as laid, substituting a bone egg for the time until all are laid, then he must be removed, the hen's nest artificially made and the eggs returned, which, if she is an attentive mother and well supplied with proper food, she will be able to rear by herself. Some breeders of these hybrids use long breeding-cages divided into several compartments, in each of which a hen Canary is placed. The Goldfinch is first put to one, and when she has laid he is let into the next, and so on to them all in succession.

The Hybrids, or Goldfinch Mules, are much prized as ex-

cellent singing birds, and are often taught a fancy song, composed of the notes of many kinds of birds, and according to their stoutness and execution are they of proportionately higher value. In plumage they are mostly of a dark colour, something of what might be expected from the mixture of the wild grey colour of a Canary with that of a Goldfinch; but the great aim of Goldfinch Mule fanciers is to breed them regularly pied, the body being yellow, or mealy, and the wings and tail resembling a Goldfinch. Pied Goldfinch Mules are not uncommon, but perfect regularity is very rarely obtained. To insure the production of pied Mules, some recommend Goldfinches with an extra number of white spots on the inner web of the tail-feathers, while others declare that a Cheveral or white-throated Goldfinch is requisite. Neither of these will insure success, and it is more to the hen Canary than to the Goldfinch that we must look for success. To attain this purpose it is recommended to procure a pair of as regularly marked pied Canaries as possible. Breed from them; then mate father and daughter, or mother and son, together, and again breed brother and sister together, always selecting the best marked and most regularly pied birds. This in-and-in breeding reduces the productive powers, but causes a tendency to produce light plumage; and from these birds, "bred down soft" as the fancy express it, are pied Mules to be expected when mated with a Goldfinch. Few, however, will care to take this trouble, and will therefore select pied hens for Mule breeding, and take their chance, if they have been previously properly bred.

The translation of M. Hervieux, 1718, previously quoted, says—"If you would have beautiful mongrels and good singers, they must be bred out of a Goldfinch, which is the beautifullest of birds as to his plumage. They may be said to be no less charming to the ear than they are agreeable to the eyes, the great plenty there is of them occasions their not being valued as they deserve. Those that build their nests among thistles are distinguished above the rest as being stronger, sprightlier, and better for singing than others. They differ something from the rest in the colour of their feathers, which are somewhat darker than those that are bred in other places.

"If you would be successful in breeding such fine mongrels, you must couple them thus:—Take a white cock two years old, and that has not been coupled with hen Canary birds, for most Canary birds are not like our nice persons—they do not love change; besides that, the hen Goldfinch must have been bred up by hand, or, at least, it must be very long since she was taken that she may be grown tame and familiar, and used by degrees to feed on rapeseed and millet with very little hempseed for reasons afore laid down.

"You must not fail from time to time to put some thistle seed into the huts (breeding-cage), where Goldfinches are sitting, for they are very fond of that seed, which is in a manner their first food.

"Put this mongrel pair together into a little cage a month sooner than the others, that they may have time to be acquainted before they come to make love.

"Thus you see you may expect a fine mongrel breed, for the cock Canary bird, whose kind commonly prevails, will produce much white, and the hen Goldfinch communicating a little of her several colours, the young ones will be worth any money. I do not say the contrary may not be done—this is, to put a cock Goldfinch to a white or Copple-crown hen Canary; but the kind of the cock for the most part prevailing in the breed, as has been said, the little ones bred by this latter couple are almost all Goldfinches."—B. P. BRENT.

(To be continued.)

OUR LETTER BOX.

RABBITS AND CALL DUCKS.—"I perceive your correspondent, 'R. S. S.' mentions the ear of a cross-bred, half-lop Rabbit is generally found deficient in length. Will he be so good as to say if he refers to the erect ear only or to both? Are they of different lengths, or equal? Can 'R. S. S.' or any other Rabbit fancier, inform me if he has found the Angora variety more dull or stupid than other sorts? Will any breeder of Call Ducks kindly say if he has found their eggs hatch sooner or in less time than those of the common kinds? I find that common Ducks' eggs, if properly incubated, hatch in twenty-six days, and wish to know if Call Ducks hatch in a shorter period."—B. P. BRENT.

A VICIOUS RABBIT (*A Constant Subscriber*).—Is your correspondent certain his Rabbit is a doe: if so, there is no remedy but to kill her. I have had them the same way, but never succeeded in breeding from them. I have muzzled them similarly to a dog, but all to no purpose, as they would not breed. Some does will attack a buck when in young, others will appear vicious, but the buck will master them. But they must be watched; and, if very violent, take the buck away.—R. S. S.

